

A and O levels – and their Scottish equivalents – have been the unchallenged passport to higher education for many years. Now **SCHOOL EXAMINATIONS** are marked down for an overhaul. Patricia Santinelli and Olga Wojtas look at the existing system and the planned reforms (page 10)

COAL was the key to the Industrial Revolution and remains, even in an age of nuclear and "alternative" power, the key to most Western economies. Three academics directly interested in the coal industry, Peter Mathias, Henry Marsh and T. Atkinson, look at some of the issues that have been passed over in the 18 weeks since the miners' strike began (pages 12 and 13)

A case for civil celibacy? In the second of his two articles, John Passmore looks at another aspect of **ACADEMIC FREEDOM** and the responsibilities it brings (page 14)



What are the "rules" of economic power? Geoffrey Samwell reviews the third volume of **FERNAND BRAUDEL's** massive overview of civilization and capitalism from the fifteenth to the eighteenth century (page 16)

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NEXT WEEK

Presences: Stephen Heath on Raymond Williams
Anthony Quinton reviews *Hayek on Liberty*
Class of '88: end of session

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Think of a number . . .

We told you so – this will be the irresistible reaction of many of the critics of the Department of Education and Science's earlier projection of future student numbers to the revised projection published yesterday. The Royal Society, the vice chancellors and the Association of University Teachers all argued that the earlier projection in *Report on Education 99* was too pessimistic and seriously underestimated the likely demand for places in higher education in the 1990s. With fair justice they will feel that their criticisms are now vindicated.

In fact the DES's second (methodological) thoughts are not greatly different from its first thoughts. On most of the elements that go to make up the total projection its statisticians have shifted their ground rather little despite the chorus of criticism. On one crucial element, the treatment of likely demand from mature students, they have modified their earlier approach substantially: on the future pattern of participation by women they have met their critics half way. These two modifications, plus the inevitable all-purpose revisionary excuse of "more recent information", have nevertheless produced a dramatic change in their overall projection of future student demand.

The most significant change is the DES's change of heart on mature student demand. In their first projection they dismissed it in a 16-line paragraph. Their critics argued that this approach was entirely unsatisfac-

tory, first because it failed to take account of the possibility that mature demand might have been damped down by the immediate pressure to accommodate 18-year-olds which has been constant for 30 years and particularly intense for the last three, and second because the DES failed to recognize that for mature students the demographic "bulge" would come in the late not the early 1980s. In effect the DES has accepted these points and added in another 15,000 or so mature students.

So who has won the propaganda battle – the DES or its critics? The DES will be able to claim that its methodology has been shown to be basically sound and that even after making concessions to the critics there is still likely to be a dip in student numbers in the 1990s. The dip may come later but it will still come – and this is the fundamental planning point that the DES is trying to get its optimistic critics to accept. For their part the critics will claim that it is not the methodology that matters but the results. Very reasonably they will point out that the new predictions are very different from the old: the gap between the higher variant of the year's projection and the lower variant of last year's is 80,000 students. If a 15 per cent spread of uncertainty can be opened up in just 16 months, what planning value can be placed on such projections? On any reasonable verdict the DES has lost on points. Perhaps the most important point to

be made about the whole controversy on these shifting projections is that they have a very limited role to play in the future planning of higher education. In its latest paper the DES offers two variants: X (based on higher education as it was in 1981) and Y (as it was in 1983). The difference between the two is something like 30,000 students by the 1990s. If the change in the character of higher education in just two years can produce such a staggering difference, how great a difference will the changes of the next 10 years produce? The equivalent of 10 or maybe 15 universities, plus or minus? We are really going to learn very little about the future of higher education by poking around in the demographic entrails.

Two final comments. Forecasting future demand for higher education is much more about the evolving style of universities, polytechnics and colleges than about close analysis of past and present trends in student enrolment. It is more in common with marketing new products than with technical number-crunching. Second, do we not need to give equal weight to the supply end of higher education? For 30 years the system has been demand-led. If it continues to be demand-led it will stumble sooner or later into the DES's dip. But do we really want a dip in the supply of highly qualified manpower in the 1990s? Perhaps manpower planning needs to make a modest comeback.

Getting our minds dirty

Howard Kirk (it hardly seems necessary, after nearly 10 years, to underline: Malcolm Braubury's Howard Kirk) has written a book called *The Defeat of Privacy*. Noisy and subversive like his earlier work, it seeks to break down the traditional grammar, methodology and organization of academic research. It is, quite consciously, a bid for immediacy and fame. Above all, it is a book motivated by "urgent feeling". In sharp contrast to Kirk's colleague and one-time friend Henry Beamish, grafting away patiently at some dim monograph unlikely, if published at all, to reach more than a few denizens of his specialism, Henry, in his country setting, seeks no more than to "define intelligent, liveable, unarming culture". Howard, the town man, at the centre of things, the pocket Brechtian, damns such motives as "evasive quietism".

Academic history, as John Passmore has suggested over the last fortnight in *The FTES*, is with the Beamishes rather than the Kirks. The monastic model, withdrawn, secluded, "pure", determinedly unsexy, has remained, quite anachronistically, the norm, while "applied" work has retained its tinge of guilt. Getting one's hands dirty, an image that suggests itself

strongly this week's articles on the coal industry (pages 12-13) is apt to be condemned at best as a temporary escape from the ivory tower, at worst as blatant self-seeking.

In a world divided between Howard and Henry, the telling ellipsis these days is not between those who generate high ideas of incommunicable force and the maintaining mass who popularize or dilute or simply teach them. This was Eliot's classicist model. Today, the world historical figures are the media-conscious, the trendwatchers, the entrepreneurs of ideas or products, spurred less by the pedagogic urge to communicate than by the desire to matter.

Ten years earlier again than *The History Man* was Al Alvarez's collection *Under Pressure*, interviews with intellectuals on both sides of the Iron Curtain. The pressures were, of course, markedly different. In the East, unpopular ideas and intransigent voices could simply be silenced. In the West, in America above all, the danger was in being taken up, having one's ideas marketed, one's criticisms licensed and assimilated. John Kennedy's White House became a kind of café for intellectuals. Yet what was being sold was a species of illusion: in

his interview with Alvarez, the poet Robert Lowell described waking after dining with JFK to read that the Seventh Fleet had been sent somewhere in Asia. Ultimately, the intellectuals did not matter as they hoped.

In his essay on "The Intelligentsia" Arthur Koestler offers a (predictably) more organic image. Intellectuals and academics are a "sensitive membrane" that stretches between the sources of power and the relatively powerless mass. The alienation associated with monasticism and the alienation carefully cultivated by nineteenth and twentieth century intellectuals became redundant in an industrialised world with mass communications, universal education and political participation. It is no longer enough to be in and not of the world. The distinction between "pure" and "applied" is a dangerous one, suggesting an awkward model of mind as something primitive and pristine, compromised by contact with reality. There are risks – misprision, with reality, but there are worse risks in holding aloof and believing that mind and intellect can work in isolation from the actual problems and situations that they are ultimately called upon to solve or explain.

The low pay crusade

It may not be the miners' strike but the present protest by university manual workers against low pay is the first example of sustained industrial action in universities that goes beyond the conventional series of isolated symbolic acts. The manual workers, who are members of the National Union of Public Employees, the Transport and General Workers Union and the General and Municipal Workers, have pursued their overtime ban with great determination. Their reward is an improved offer of more than 5 per cent, which the GMWU certainly, NUPE probably and the TGWU possibly will recommend them to accept.

For the universities it has been a significant episode. In the early days of the dispute they seemed to hope that their traditional response of benign inertia, the Pontius Pilate line of "if course we are on the side, but we would do the trick. But the manual workers who know from direct experi-

ence that such benignity is often just another form of patronizing paternalism and who suspect that their employers have rather more room for manoeuvre than they pretend refused to fall for it this time. So they took effective industrial action and established a pregnant precedent. The universities annoyed by the action and alarmed by the precedent came up with the improved offer, which with luck will settle the dispute.

Underlying this dispute has been the issue of low pay. The universities have always rejected the implication that they are skin-flint employers and insist that they pay a good going rate to their manual workers. The unions do not accept this defense and have produced figures which support their contention that low pay is endemic among the less favoured employees of universities. In particular NUPE underlined new general secretary, Mr Rodney Bickerton, who in his previous role as national

officer learnt a thing or two about this very subject) is determined to lead a crusade against low pay.

The result of this union pressure is a commitment by the universities, as part of the 5 per cent deal, to take part in a joint examination of the level of earnings of manual and ancillary workers. This will include not only a direct comparison with those in comparable jobs – which the universities hope will exonerate them from the charge of being skin-flint – but also a comparison between the pay of university manual workers and average earnings, which will underline the unions' argument about low pay. Without prejudging the result of this joint examination it is worth emphasizing that what looks like a very generous deal in percentage terms represents in real cash only £3.35 extra a week – which may help to set the measure of the universities' undoubted problems of low pay.

Laurie Taylor



"Academics are lazy at doing cheating" – conference report, 10 July 15.

Shall we start at the beginning, Professor Lapping? What's that, Doctor Wernitz? At the beginning of Prudom's Prudom?

To check for plagiarism, Professor Lapping. You remember the best decision?

Oh yes. Quite right. Do come, Doctor Wernitz. My mind is a little fuzzy. You know, that damn vote on the word processor course, compelling a definition of "the ideal exigency" for the burner. I only that . . .

Yes, yes. Do fire away. Right you are, sir. Now I've outlined the second sentence of third answer because it does not face of it a trifle problematic.

Well, sir. It does read a little strangely. Yes, here we are. I'm not of the subject of the creation refers to the existence of a euphoric pronouns which found nature of discourse as the setting of specifically located subject positions.

Well, that sounds pretty colorful, me, Doctor Wernitz. After all, I'm dealing with a question on the relation between semology and psychoanalysis. Nothing wrong with that answer. Very on the right lines, I would have said. No, sir. You miss the point. The suspicion is aroused by the contrast between that no doubt exact point and the sentence which precedes it.

Do get a move on, Wernitz. Well, sir, the preceding sentence reads: "This is a very difficult subject that I think in my opinion says that it is very important."

Yes, that is a trifle loquacious. But satisfactory. Satisfactory. And then on the next page, sir, a second paragraph, we have the sentence: "The process of production of representations and subjects for these representations is reinforced by material epistemic attitudes."

Sounds fairly straightforward, Wernitz. As these things go. Ah, but, Professor Lapping, like to this from the standard text on language and materialism: "PROCESS OF PRODUCTION AND REPRESENTATIONS AND SUBJECTS FOR THESE REPRESENTATIONS IS REINFORCED BY CERTAIN MATERIAL EPISTEMIC ATTITUDES." Absolutely identical, except for three words.

Well, Wernitz, I concede that they are similar, but then one is a definition, the other is a statement, with fairly standard "processes", "production", "representations", "subjects", "material apparatuses". You suddenly start calling them by names like "marronade". No, but, Professor Lapping, what possible grounds can you have for saying that this is original work?

More or less, Wernitz, more or less. Good heavens. You see one mustn't drive oneself into a corner over these matters. Wernitz. There are serious scholarly questions for academic scholarship in general. Always remember that the original writer is not he who writes from imitating others, but he who can be imitated by others. Yes, Wernitz. Are those your own words?

More or less, Wernitz. More or less. First published July 22, 1981.

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NAB demands parity with the universities

by John O'Leary

A ten point plan which would put polytechnics and colleges on a par with the universities and protect future funding levels forms the basis of the National Advisory Body's proposed contribution to the "great debate" on higher education.

The final draft of its advice to Sir Keith Joseph, Secretary of State for Education and Science, will be put to the NAB board on Monday and could receive committee approval early next month. One last meeting has been timetable for September 10 in case local authority leaders demand changes to the document, which is 90 pages long.

The draft, which has already been partially rewritten after discussion by the board, includes one chapter jointly written with the University Grants Committee, which argues for a revision of the Robbins Principle on access to higher education. But elsewhere, it makes a strong case for more equal treatment for the public sector compared with the universities.

It stresses that there is no scope for further overall cuts and calls for common funding levels for teaching (though not research) throughout higher education. It also advocates a national system of external validation, which would encompass the universities as well as public sector institutions.

In a report likely to prove more controversial than might have been expected, the board will also be asked to press for extra money for research, capital projects and the establishment of a new centre for higher education policy studies. In addition, there is a call for change in the delicate political area of local authority powers over

polytechnics and colleges.

Its ten point plan would consist of:

- the acceptance of continuing education as a major objective;
- making "the ability to benefit" the dominant criterion for entry to courses;
- planning total student numbers at a level well above the lower of the projections published by the DES;
- planning public sector numbers at around their present level for the rest of the century;
- encouraging more flexible patterns of provision and entry, partly through higher diploma courses;
- the acceptance that resources cannot be reduced; indeed, should be increased to accommodate increased student demand, provide selective support for research and the development of continuing education, and to fund maintenance and equipment;
- the retention of a system of "external quality assurance of courses based on peer group assessment", which should be extended to the universities;
- a common unit of resource for teaching purposes throughout higher education;
- the reaffirmation of accountability in the public sector, combined with a greater measure of institutional responsibility.

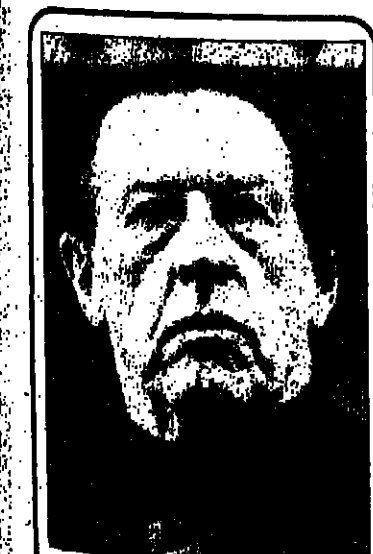
Further progress towards the integrated planning of higher education, developing closer links between the NAB and the UGC.

The common chapter with the UGC recognizes that universities will take the lead in research and postgraduate provision generally, while the public sector will lead on non-degree, professional and part-time courses. The chapter proposes to reinterpret the Robbins Principle on the question of qualifications.

However, other sections of the document are likely to prove less popular with the UGC, particularly when the NAB calls for an estimated funding gap of £400 per student for teaching alone to be closed.

The draft estimates that by next year unit costs in the public sector will have fallen by more than 9 per cent since 1982/83 and there may be a long-term effect on quality which is not evident yet. Reaching the NAB's stated target of an overall staff/student ratio of 1:1 will require an increase of 20 per cent in "teacher productivity". This will only be achieved with difficulty and its impact should be monitored by Her Majesty's Inspectorate and the validating bodies.

Budgets for capital work are said to be grossly inadequate and a major initiative is needed on equipment. The research councils are to be approached to assist in raising £20m for research and a detailed case is made for planning for roughly level student numbers to the end of the century, with additional funding to maintain the controversial notion of two-year degrees is dropped.



The presence of Raymond Williams, 17

Demonstrators may ease polytechnic shortages

by Karen Gold

Polytechnics may introduce a new breed of staff as a way of getting round shortages of staff and money. "Demonstrators" would slot in on the pay scales somewhere between academics and technicians. They would set up and perform experiments, advise on and carry out engineering and design projects but would not mark work.

The new grade would get round health and safety regulations.

Kingston Polytechnic director Dr Bob Smith is thinking of approaching his own recent graduates, asking them to do a few hours teaching a week and offering them the chance to do research as an incentive.

At Leicester Polytechnic Dr David Bell, the director, has begun informal talks with academic and non-academic staff unions on the possibility of recruiting demonstrators during the coming academic year. He wants well-qualified people, possibly from indus-

New committee decides MRC cuts



Spike Clay, senior research officer at the MRC pneumoconiosis unit, Cardiff at the demonstration

Two-year training scheme ruled out by MSC group

by Patricia Santinelli

A two-year Youth Training Scheme has been turned down as premature by the Youth Review Group set up to advise the Manpower Services Commission on the future of the scheme for 1985/86.

The group which presented its report to the MSC Youth Training Board yesterday says that the priority should be to make progress on quality and standards, although there might be a case for a more flexible length of stay for special groups.

Although the group is not convinced that the balance and the size of the scheme is right – the MSC has been asked for further work on this – pending further information and in order to achieve stability, the YTS in 1985/86 should provide – for the same numbers as in 1984/85, about 400,000 trainees, and adhere to the same balance of provision.

It wants decisions on the size, balance of provision, level of grants to managing agents and sponsors and training allowances to be made known by the end of the calendar year prior to the start of the YTS, rather than the confusion which is current.

The group says that some method of compensating managing agents and sponsors who have lost money as a

result of a shortfall of trainees in the scheme must be found. It suggests four options, all of which would involve a substantial increase in public expenditure. One of the four options is a *post hoc* compensation scheme for costs arising out of unoccupied places.

But a draft document on training for the future drawn up by the Labour party and the TUC joint liaison committee and being presented to the TUC next week says all 16 and 17-year-olds would be given a guarantee of two years' education, training and work experience if Labour came to power. A two-year scheme would be part of an advanced national training system stretching from young people still at school to adults, and offering training not as a temporary measure but as an investment in knowledge and skills.

To ensure participation in a two-year scheme, legislation would be introduced giving all young people including workers, the statutory right to training and further education. All the courses in this two-year programme should be designed for the greatest possible flexibility with building blocks of achievement to allow young people to develop at their own pace and receive a worthwhile qualification at the end. It should also allow for open access to full-time and part-time.

continued on page 3

by Jon Turney

Science Correspondent

The Medical Research Council was unable to decide last week whether university grants or council research units should bear the brunt of future budget cuts.

The council declined to endorse a plan which would give unit directors relief from emergency cuts in recurrent expenditure imposed earlier this year. Instead, a new strategy committee was set up to report by September on ways out of the council's present overcommitment.

The MRC must decide before October how to adjust to loss of £2.7m from its £120m annual budget between 1985 and 1987. Last Thursday's meeting was expected to produce a strategy, and 200 MRC staff demonstrated outside the council's London headquarters to back the case for extra cash.

The strategy put before the meeting, thought to be favoured by the MRC's secretary, Sir James Gowans, would have restored recurrent grants to units next year, at the expense of project and programme grants in universities. There would then be a reduction in unit staff through early retirement or redundancy, with the long-term aim of fewer, stronger units, and university support at something like the current level.

MRC scientists outside the meeting made it clear that the reduction in the budget for laboratory supplies in units, averaging 21 per cent this year, is hampering their research. However, what scientists in units see as a built-in majority for university researchers on the council has prevented immediate relief for in-house work.

There are clear tensions within the council about how to proceed. It is now accepted that the MRC will have to live within the budget guidelines laid down by the Advisory Board for the Research Councils. But the two schools of thought, one arguing that in-house units do the best research, the other that the 35 per cent of the budget going direct to universities must be protected, have yet to be reconciled.

This job now rests with the new strategy committee, which Sir James will chair, and which will include members from universities and MRC institutes and research units.

The committee will also have to take account of unrest among MRC boards, who are upset at the way recent decisions to close units have been handled, particularly the demise of the Neurochemical Pharmacology Unit in Cambridge.

The danger in idol thoughts

Universities are in spiritual danger and academics risk idolatry because of the way they pursue knowledge, according to the Rev Melvyn Matthews, senior chaplain at the University of Bristol.

Writing in *Sensation*, a terribly bulletin for chaplains in higher education, Mr Matthews says academics must realise there is a "profoundly spiritual profession", which must be pursued at the most profound level of the human personality and with all the wit and grace and heart of which human beings are capable. If it is not pursued in this way then it falls into idolatry more quickly and more surely than almost any other profession.

The academic profession is a profession of love, hidden by or disguised as, the pursuit of knowledge. And to ignore that, he says, means universities will fall into heartlessness. One difficulty is that the quest for knowledge leads itself to superficiality. The "false self" of the academic which seeks knowledge as good for his ego, is only encouraged by the academic life.

Letters to the editor

A breach of academic freedom

Sir, - Your forthright criticism of the attempted interference by the Department of Education and Science with the D102 course of the Open University (THES, July 6) is much to be welcomed; but there are some matters that require further emphasis. The first is that while the press has been allowed to see the DES report, it is not yet a public document, and all that the academic world can do is to assess its content from the summary and the brief quotations that have appeared in the public print. Moreover, it is a document the authors of which are evidently to remain unknown.

The academic world is, of course, becoming used to essential information being withheld. The 1980/81 University Grants Committee financial cuts - which began the whole misadventure of the last three years - were based upon criteria which have never been made known, and which are now widely accepted as having been quite arbitrarily determined. In the present situation we must surely campaign for public access to the DES documents

and for its authors to be identified. This interference by the DES - widely accepted in Whitehall as the initiative of Sir Keith Joseph himself - is a clear and serious breach of academic freedom. Is it not the opportunity for the UGC - on this one important matter - to show that it is not wholly the creature of the Government, which all its recent actions have suggested, and affirm the basic principle that once courses have been established, universities are free to teach what they themselves consider fit and proper? And for decent measure, why cannot the Committee of Vice-Chancellors and Principals come publicly to the aid of one of their brethren?

Yours, etc.
JOHN SAVILLE,
Chairman, Council for Academic Freedom and Democracy.

Sir, - It appears that David Hancock, permanent secretary at the Department of Education and Science, has decreed that I and my fellow students

are inexperienced and lacking in access to other forms of instruction. Could I, through your column, take issue with this?

Open University students are very varied, and come from a wide range of social backgrounds. We hold a variety of jobs, and come from across the full post-21 age range. However, there is one common factor: we are, none of us, inexperienced. We are mature adults who now choose to study at university level in our own time. I can only be offended at the peculiarly patronizing comments of Mr Hancock.

Are Open University students to be regarded as some kind of empty box ready to be filled with academic fodder - unquestioned and undebated? As anyone knows, who has actually met Open University students (as unfortunately the Secretary of State for Education continually refuses to do), we are a highly questioning and vocal group. We do not sit placidly accepting all that our units and tutors tell us. We bring into discussions our wider experiences of life, other academic areas

and our knowledge of the world outside of the ivory towers of academia.

Could I suggest that Mr Hancock and Sir Keith Joseph need not worry even if the course in question was biased (something that the external assessors have constantly denied)? We Open University students are such that we are more than able to assess and make our own decisions. If Sir Keith would like to worry about the welfare of OU students, could I invite him to look at our fee level, the reduction in services to our many disabled students and the general hardships that we are facing, all a direct result of the swinging reduction to our budgets from the Government. But surely there can be no connection between the vicious cut and the attempt at a Marxist witch-hunt. As an inexperienced Open University student that is far too complex an issue for me to consider.

Yours sincerely,
IRIS PRICE,
President, Open University Students Association.

Israeli jobs

Sir, - Benny Morris (THES, June 22) is misleading his readers when he suggests, with reference to the situation of university graduates in the occupied territories of the West Bank and Gaza, that the problem of graduate unemployment (together with its social and political consequences) is a result of "the educational boom". The fact is that graduate unemployment is a direct consequence of the very real constraints on the economic and social development of the occupied territories imposed by virtue of the relationship between the territories and Israel - which may be effectively described as colonial. While the anger and frustration felt not only by university graduates but by the vast majority of Palestinians living in (and outside) the occupied territories also stem from the fact of Israeli military occupation and the very real constraints on social and political freedom experienced in the territories, Benny Morris focuses on the consequences of Israeli occupation and control and ignores the real determinant both of graduate unemployment and of the growing opposition to Israeli occupation: Israeli colonialism.

Yours sincerely,
DAVID SEDDON,
Reader in development studies,
University of East Anglia.

Pleasing trivia

Sir, - It was pleasing to note that your correspondent, Paul Flather, suitably trivialized Dame Mary Warnock's appointment to Glendon College (THES, June 22).

In any future reporting of a time-consuming appointment offered to Geoffrey Warnock, may we look forward to Mr Flather's opening line, perhaps as follows: "Dame Mary is going to have to learn how to wield a screwdriver".

Yours faithfully,
EILEEN SYMONDS,
80 Herons Wood,
Harlow, Essex.

Easy reading

Sir, - I find J. Paul's criticism (THES, July 6) of Martin Atkinson's review of *Children's Talk* quite extraordinary. Is it really reasonable to expect that a brief review of an academic book, in a section of the paper clearly aimed at specialists in the field, should be accessible to the casual browser? Anyone with the slightest understanding of linguistics or child language acquisition would find every word of Atkinson's review perfectly comprehensible.

Yours faithfully,
JENNY THOMAS,
Department of Linguistics and Modern English Language, University of Lancaster.

New aviary

Sir, - It was with interest that I read David Jobbins's article (THES, June 8) on the growth of ornithology. It is indeed timely that the Royal Veterinary College (University of London) has been far-sighted enough to launch an exciting new project which is the brain child of Dr Colin Dawes. He is the director of the college's egg research unit which investigates aspects of the breeding and hatching of birds. To expand this work, Cedric Price (the architect who collaborated on London Zoo's Snowdon aviary) has designed an aviary to adjoin the unit.

The Cedric Price aviary will have many sophisticated and novel features, not least being its adaptability, allowing a range of species to be housed. Above all, it will be possible to monitor the complex nest environment without disturbance to the birds. Information thus gained could be instrumental in helping to save endangered species. The aviary will also provide a valuable asset for teaching veterinary students, who will thus gain an insight into the care and welfare of birds. Vets may therefore be encouraged to work more closely with the conservation groups aiming for what Jobbins called a "conservation awareness".



A young Dartford warbler under scrutiny.

An appeal has been launched to raise funds for the construction (£130,000) and equipping (£60,000) of the aviary. Donations and/or enquiries should be directed to Dr C. M. Dawes, the Royal Veterinary

College, Royal College Street, London NW1.
Yours faithfully,
M. HOOPER,
Department of biochemistry,
University of Leeds.

Blind injustice

Sir, - We were interested to see your feature on Najeh Khandagh "Blind Justice" (THES, June 29).

There are at present some 65 totally blind students at universities and polytechnics in the United Kingdom and about the same number of blind students with some sight. They are reading a variety of subjects including economics, law, computer science, criminology and medieval French.

The Royal National Institute for the Blind helps blind students in various ways, as we were pleased to do with Miss Khandagh. Some of the ways we help include making financial grants towards the cost of equipment such as tape recorders and to pay people to read; providing study and careers advice; visiting and holding discussions with staff and other students; lending equipment such as magnifiers and putting into Braille or on tape books needed for study; helpful literature - *Blind and partially sighted students in college* is free from the RNIB at 224 Great Portland Street, London W1.

Universities are generally extremely helpful to visually handicapped students. The RNIB's education department is always pleased to hear from handicapped students and their teachers.

Yours faithfully,
NEVILLE LAWSON,
Education Officer,
Royal National Institute for the Blind.

Mining courses

Sir, - Tom Clarke's letter (THES, June 22) suggests that the National Coal Board is assuming the right to determine the number and location of mining courses. This is not so.

The NCB, as a major sponsor and employer of mining students, was asked by the National Advisory Body for its views on the "provision of advanced mining courses and its duly given them.

It is satisfied with the standards of the courses at all three institutions involved - namely Trent Polytechnic, North Staffordshire Polytechnic and Doncaster Metropolitan Institute of Higher Education.

The NCB shares Tom Clarke's desire to see advanced mining provision retained if possible at all the three institutions.

If it would welcome any initiatives by other employers' associations with coal mining and other extractive industries to sponsor students; provide industrial placements on qualification and thereby assist in keeping the full range of courses viable at all three centres.

The NCB's views, however, take into account NAB's concern that there are too many courses chasing too few students.

finding industrial placements and jobs on qualification touches on only one of a wide range which NAB will have to weigh in coming to their conclusions. One of a wide range which NAB will have to weigh in coming to their conclusions.

The NCB does not expect to increase the number of mining students it sponsors on advanced courses in the immediate future. Tom Clarke thinks the NCB's medium term needs should concede priority to the longer term when there are possibilities of an increased demand for higher technicians in mining.

This must be for NAB to decide. The NCB has recognized throughout the review that the allocation of public funds to advanced further education and the number and location of mining courses in the light of economic and other criteria is for NAB and not for the NCB to determine.

Yours faithfully,
PAUL W. GLOVER,
Director General of Staff,
National Coal Board,
Hobart House,
Grosvenor Place,
London.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Overseas fees policy

Sir, - John O'Leary's report on the Commonwealth standing committee on student mobility recommendations (THES, June 29) yet again highlights the unfortunate results of an unnecessarily unwise Government decision, both in its content and in the way it was done.

The Government's sudden implementation of what were, and are called full-cost fees for overseas students has, to my knowledge, (a) created a worldwide fund of ill-will to Britain; (b) has caused other governments either to raise fees for overseas students or to impose quotas on their entry; and (c) because of the destruction of a long established tie, caused at least one developing country to go to the expense of an extra year for student reorientation because of problems "culture shock" in other countries; (d) diminished one of Britain's great exports, i.e. education (unappreciated as such equally by the major parties) and handed over a great deal of influence in terms of culture, education and trade to other nations.

Moreover, British representation abroad seemed to be unaware that fee in many American institutions was still well above our "overseas fee", and had made no effort, to my knowledge, to present the problem in its best light - the matter was evidently insufficiently important!

As one committed for the past 3 years to Third World development, welcoming students each year, it pains me to see the continuance of a policy designed to meet the immediate need of a yearly balance sheet rather than face the importance, in the long term, of cultural and educational influence not only to international development but also - and no less - to self-interest (a) nationally in terms of trade, (b) success at the next election, when the long term effects of the policy may well be better understood.

In China, for instance, we have recently seen one or two agreements with British institutions but, as a recent visit, I saw one minor piece of British equipment but to one agreement with a British institution of higher education in spite of agreements in existence with France, West Germany, Russia, the United States, etc.

Yours faithfully,
P. HAVARD-WILLIAMS,
Professor of library and information studies,
Loughborough University.

Runner-up

Sir, - In your article of June 29, you wrongly state that West Germany's first private management school is to be established in Koblenz. We should like to point out that this institution is not the first of its kind in the Federal Republic.

The European Business School Schloss Reichartshausen am Rhein was established in 1971. It was recognized by the Ministry of Education and Culture of the federal state of Hesse in 1976 and today has 400 students.

Thus the EBS was - and still is - the first and only independent private management school in West Germany. There are in fact a number of flourishing similarities between the proposed Koblenz school and the EBS. At EBS, cooperation with management schools abroad has been central to the EBS philosophy since its foundation: EBS Paris was founded in 1967, EBS London in 1975, and the programme in Koblenz seems to have been derived from the EBS model.

Yours faithfully,
G. KUSTER, A. LEE,
Schloss Reichartshausen.

A. JABLONCZY,
M. COCHRANE,
Paris.
P. BULLOCK, N. BOWEN,
London.
European Business School.

OU overruled over grant cut

by Patricia Santinelli

Sir Keith Joseph announced this week that he had already made a decision on the Open University's funding. This was in spite of the fact that the allocation was provisional and was to be discussed by the OU's visiting committee appointed by the Secretary of State for Education himself.

Sir Keith told the Commons Select Committee on Education Science and Arts that his decision was made. He later repeated his statement in replies to questions in the House.

"I have decided and told the Open University what its allocation from the taxpayer will be over the next two years and it is most unlikely that that will be changed," Sir Keith said.

The OU originally intended to discuss its future plans and their financial impact with the visiting committee, composed of academics, administrators and industrialists who would then report to Sir Keith in September. But he now appears to have overruled them.

The spirit of Cardinal Newman was invoked by Sir Keith Joseph, the Secretary of State for Education, last week in a speech designed to allay fears that the Government was neglecting the plight of the humanities within higher education.

Sir Keith, speaking in London to the fellows of the British Academy at their annual general meeting, set out the underlying philosophical arguments which justified permanent public support for both economically important and culturally important subjects.

His address had been prompted by widely voiced fears - including a statement from the academy to the University Grants Committee's strategy plan - that the humanities were being unfairly squeezed in the Government's drive to give priority to higher education areas which would directly aid economic recovery.

"For the sake of the continuance of our liberal society, for the sake of the intellectual and moral standards that guarantee our freedom, scholarship and teaching in the humanities must be preserved so as to benefit each succeeding generation," he said.

He said both those who wanted support for economically useful training and research and those who in Newman's words saw higher education institutions as a place of teaching universal knowledge had legitimate and honourable aims.

He quoted Newman again to defend the importance of teaching students about the use of imagination, inquiry and rational debate to the benefit of themselves and the nation. "In the cardinal's words, 'to leave the dense mass of facts and events with the elastic force of reason'."

His sharpening of the intellect, he continued, was needed in all the manifold activities of a free society, by the nation's scientists as much as by its judges, businesspeople and its politicians.

He said the country would be impoverished without the culturally important subjects. But he stressed continued public support could only be justified if standards remained unimpaired and allowed society to derive real advantages.

The initial reaction of the academy has been a general feeling of gratitude that the minister has publicly defended the permanent place of humanities within the higher education structure. But some concern about further funding levels.

Sir Keith did not discuss specific funding levels and some fellows still feel that only small proportions of extra funding for humanities research would go a long way to alleviate what they reckon to be inadequate levels.

Homerton move
Mr Alan Bairford, principal of West-
hill College in Birmingham, has been
appointed principal of Homerton Col-
lege in Cambridge, in succession to
Miss Alison Shuttleworth. He will take up
his new appointment next May.

Sir Keith also flatly rejected the OU's own calculations that it stands to lose £13.5m by 1986 as a result of grant cuts. Its grant for the current academic year is £38.7m and it has been told that its grant for 1985 and 1986 respectively will be £39.1m and £38.2m.

Sir Keith said that the £13.5m calculation was the university's and not his Government's. He did not believe the figures and wanted to see the basis for them. In fact the figures have been available to the Government since March 6.

The university maintains that it has experienced reductions in real terms and this is shown by the DES's own calculations which show that 1986's recurrent grant is less than that in 1976. It also says that the figures for 1985 and 1986 are set at current values and take no account of salary increases and replacement of equipment.

The OU says it has already had to make cuts of £3.3m in 1984 compared to 1983 and would have to make a cut of £4m in 1985 and a further one of £6m in 1986. This would mean that by next February it would have reduced its

television programmes by a quarter and its student numbers by 7,000. This would mean a student population of 18,800 next 1985 as opposed to 26,000 in January last year.

Sir Keith told the Select Committee that he did not believe the OU could not absorb the proposed reductions without cutting its activities. It had to face reality.

The OU's council meeting on Tuesday reassured that the situation was very grave. Sir Kenneth Berrill, pro-chancellor of the OU and Mr Oliver Thompson, chairman of the council's finance committee, will write to all MPs to confirm that they stand by their figures and that the OU's position is dire.

Sir Keith and the OU also clashed over his assertion that the OU was not more cost effective than other universities.

Sir Keith also told the Select Committee that Marxist bias inquiry into the social science courses at the University had been necessary because of a small number of significant complaints.

Crash course to yield more IT graduates

by Jon Turney
Science Correspondent

Short-term measures to boost output of information technology graduates in the next two or three years will be proposed by the working group on skill shortages set up by Mr Kenneth Baker, minister for information technology in the Department of Trade and Industry.

The working group, chaired by Mr John Butcher, under secretary at the DTI, has finished its first report, which was due to go to the secretaries of state for industry and education this week. It confirms that there is an urgent need to increase output in maths, electrical and electronic engineering and computer science.

The first report, which mostly deals with demand for graduates, will concentrate on ways of increasing supply of key skills beginning in the coming academic year. But there is already doubt in some universities and colleges if financial approval for new initiatives, likely to be modelled on existing conversion courses and retraining schemes, will come in this October.

Even if small-scale schemes can begin this year the larger problem will remain, and the Butcher group is expected to make a second report in the autumn, looking at supply of graduates and technicians. Projections of demand from high-technology companies show demand for IT graduates growing by between 50 and 60 per cent by 1989, so students to meet this demand must begin degrees by 1986.

Both short and long-term policy proposals for the group will seek to increase industrial involvement in training, both in sponsorship and in seconding staff to higher education institutions which are now finding it very difficult to recruit people to teach IT courses.

And the group has heard a proposal from a group of leading companies for a new agency "to prevent and cure shortages of technological skills vital to the national economy". The companies, which include Plessey, GEC, Standard Telephone and Austin-Rover, argue that a new agency is needed because the problem cuts across so many existing bodies - including the Manpower Services Commission, the Engineering Industry Training Board, and Government departments.

A set of guidelines for the agency drawn up in May says it should not run courses or validate them, but provide a sharp focus for policymaking and publicity to meet skill shortages. The Engineering Council is thought to be considering whether it could take on such a role, which might be seen as an educational answer to the A-level programme for computer research.

The stumbling block would be that any such body would need novel financial powers. Present indications are that further moves to shift emphasis towards engineering in higher education will have to be made within existing resources. A separate large-scale scheme for speeding up moves to boost engineering, conceived in the Department of Education and Science, recently died because none of the education, industry or employment departments could raise the money.

Queen's University, Belfast this week rejected a recommendation to dismiss a tenured lecturer for "good cause".

But the senate accepted the findings of a standing committee that Mr Geoff Sirockin, aged 49, a lecturer in microbiology had an "unacceptable and unsatisfactory record". The senate issued him with a severe warning and will arrange for close scrutiny of his future conduct and progress. This will be reviewed later.

Mr Sirockin faced an alleged catalogue of items that accumulated in a record of unsatisfactory behaviour over seven years. These included abusing the chairman of an area safety committee, acting in a disruptive and

belligrent manner and using offensive language, failing to pass the efficiency bar, failing to perform administrative work, cancelling a lecture without giving proper notice, and failing to return library books on time.

Mr Sirockin, who has been at Queen's since 1976, rejected the allegations and he was supported at the senate by Mr Roger Jeary, a full-time official of the Association of Scientific, Technical and Managerial Staffs.

Dr Peter Froggatt, the vice-chancellor, said that no single item constituted charge on its own. The case was brought because of the accumulative record of unsatisfactory behaviour over a number of years.

The occasion was followed by dinner with Mrs Thatcher. Sir Keith Joseph, Secretary of State for Education and Secretary of State for Science, Technology and the Arts, was also present.

However, several of the presentations touched on subjects high on research council agendas for new funding. For example, the biology research council was asked to fund a potential computer chip materials. Again, the SERC is keen to back new work in this area.

Lecturer severely warned

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Legal eagle: Jack Nicklaus, the golfer, this week received an honorary degree from Dr J. Steven Watson, principal of St Andrews University. This started his bid for a second prize at St Andrews, his third consecutive Open Championship.

Two-year YTS ruled out by group

£5m appeal for private school

continued from front page

time further and higher education from the age of 18.

The document says that major changes must be made in the Youth Training Scheme if it is to regain the confidence of young people and all those on whom it success depends. It is time to return to the Youth Task Group proposals for a broad flexible vocational preparation rather than the existing narrow employer-orientated training.

It proposes that the allowance for trainees must be restored to its original value. This would be £34 per week and should be linked to the cost of living. Trainees on Mode A schemes should be given worker status, and the scheme must remain voluntary. The two different modes of the YTS should offer a real range of choice properly resourced to meet the real needs of young people.

The proposals also include providing more resources for further education colleges, and those who supervise trainees and for increasing MSC monitoring staff.

The Labour TUC plan wants the YTS to be linked with new measures to encourage young people to stay on in full-time study and would make it mandatory for all local authorities to provide educational maintenance awards for young people over 16.

Wider opportunities for adults should be provided by removing barriers which prevent them from getting education and training. These include unnecessary academic entrance requirements, lack of financial student support, prohibitive course fees and inadequate part-time provision. In addition all employed adults must have the right to paid educational leave.

Such a plan, the document says, will require more resources for education and training, including direct funding for local education authorities.

Further details of the controversial plan to open Britain's first independent medical school designed to "introduce radical new ideas in the selection and training of doctors" emerged this week.

Dr Paul MacLoughlin, who runs a Harley Street practice, confirmed that he hopes to open the Hunter School of Medicine in the vacated Bedford College buildings in Regent's Park early next year for 50 fee-paying students, about 30 from Britain and 20 from overseas, all aged at least 21.

The plan is still strongly opposed by the British Medical Association because it is committed to reducing the overall clinical student intake next year, and because it believes London hospitals are already over-burdened with the number of students currently needing access.

Dr MacLoughlin said he was still very much dependent on outside backing to launch the school but the idea had become a reality now that he had premises to be sub-leased from Rockford College, in the United States, which is buying the Bedford College lease.

He launched a £5m public appeal to pay for academic chairs, scholarships, bursaries and research. He stressed the aim was to introduce new ideas into medical education and not to make money. "We will be totally dependent on fees and charity funds," he said.

Work on a new syllabus designed to break down the "artificial division" between pre-clinical and clinical training is underway. A statement by Dr MacLoughlin lists a series of new elements to be included in the school's curriculum including computer science and information technology, efficiency in running health care, preventive and community medicine, the history of medicine, emphasis on meeting psychological, psychosomatic and social problems, and basic research techniques.

Dr MacLoughlin hopes to draw his overseas students from Brunel, Borneo and Sarawak, as well as the Middle East and North America, and plans to insist every student returns home after training. Each will pay £7,500, about the current overseas fees level.

He will have talks with the General Medical Council next week when the BMA objections are likely to be discussed. Dr MacLoughlin said he did not want to be drawn into the numbers game. But Dr Colin Smith of the BMA's medical students' staff committee, said a new school at this time would be educationally unsound, compromising the position of existing medical students.

DON'S
DIARY

SUNDAY

There are at least two reasons for keeping a diary. The first and most common is to record - usually on a daily basis - the major events of one's life for future perusal, posterity or publication. The second is to record in private, often half-thought-out (and half-baked) secret ideas, desires or passions, believing with the psychoanalysts that the very expression of these thoughts helps in some way to clarify them or to free one from the irrational grip of desire.

This afternoon's private stream-of-consciousness notes concern vocational choice - why am I a don? Just as the experience of being taped (audio and even more video) or even seeing oneself reflected in a shop window focuses attention inward on oneself (revealing the yawning gap between actuality and the ideal) so meeting old friends leads one to reflect on the decision of becoming a don. We can all probably remember the tedious engineer obsessed with football who despite a 2:2 and no sense of humour, imagination or insight is now the proud and comfortable possessor of 2.7 children, 2.7 houses, 2.7 cars and all the other trappings of someone on a very high tax evasion bracket. Or the pompous philosopher with profound view on all aspects of life and precious little experience of any of it who charmed some multinational with his conceptual psychobabble and is now the powerful head of personnel. So meeting these "friends" of one's past tempts the don to commit either or both the sins of avarice (for wealth) and envy (for power).

So why choose to become a don - a job that necessitates an apprenticeship almost as long as a brain surgeon yet pays about as much as a taxi driver; a job where the criteria of selection (research, publications) bears no relationship on the task being performed (teaching, administration)? But to take seriously what psychologists call dissonance reduction, my father used to call buyer's nostalgia and the layman rationalization, I believe there are four very good reasons for being a don - even in these hard and depressing times.

The first is flexibility. This is not only refers to when (and for how long) one works but where (home, office) on what topic, and for whose benefit. Consider the contract of employment. In mine, point six reads "There are no fixed number of hours of work for members of the academic staff" while seven notes "No specific periods of holiday on full pay are laid down". Usually the university term comprises somewhere between 24 and 30 weeks of the year - the only time that one is expected to be in. Cynics point to the extraordinary amount of non-committed (non-class-contact time) that dons have, concluding that most are severely under-employed or overpaid for the work that they do. Of course by being able to choose how to spend one's time - in or out of term - in any way one pleases means that some dons can indulge their passions.

For some there are non-academic and their input to departmental research, administration and teaching is minimal - they are the absentee landlords of their office space, academics with a fine future behind them pottering around at home or on some distant shore. Others are out supplementing their meagre salary doing consultancies, running workshops, writing books (though as most soon find out, this is rarely the route to wealth), even running companies. But these are the exception rather than the rule. It's Sunday afternoon in central London and there are at least six members of staff in (we have to sign in for insurance purposes). On a Saturday there are twice this number in. They are not making money but indulging in an often dreary, difficult task - research. For some of them research is a bit

like praying - a private, respectable but ultimately pointless activity; for most it is a sheer delight. And because one can research on practically any topic one chooses (within reason, for there are funding bodies, academic *zeitgeists* etc to take into account) one is ego involved. There is no money, often no publication - no tangible reward - for this activity; and yet people work extraordinarily hard at research. But most of all being a don gives one control - control over one's time, one's writing etc, and a control which is surprisingly seldom abused.

The second reason will probably appeal more to older than younger dons. It is being surrounded by ever young, bright enthusiastic people. They are ever young (unlike oneself or Ronald Reagan), because they change every three years: so although as one gets older oneself they do not. Of course there are mumbings about declining standards, apathetic, indulgent, and dim students; but most dons would admit to often being surprised, charmed and interested by a student. They are often handicapped - we take about 10 per cent who apply - eager, hungry people from a variety of backgrounds who are mostly mature, self-sufficient and with a variety of skills and talents to bring to their discipline. This is just as true of mature students (viz *Education Rita*) or postgraduates as of undergraduates - indeed perhaps more so. What other job offers such attractive clients as academics?

Thirdly, one has respect-worthy peers. I must admit I hesitate a little over this one, but I think that it is generally true. To have pleasant clients is one thing, but to have pleasant peers is quite another. Most are intelligent, insightful, tolerant and cultured. Of course there are many traits associated with dons which are less appealing (but very apparent) - social inadequacy, obsessiveness, vagueness - but by and large the better traits are more important and more manifest. This is not to say of course that the desirable traits found in dons are not found in people in other jobs, but rather that proportionately they seem to be higher in the academic life. Doubt is now creeping in: I had better move on.

Finally one's superiors have fairly minimal power over one. Again this is a comparative argument but it is probably true thanks to academics' love of democracy and the committee - a phenomenon once described as that which takes minutes but wastes hours. The need for consensus, for being fair, for upholding academic freedom, means that in few departments (at least in my experience) there lurks the old style Viennese dictator imposing his erratic will on all around him. It is because academics often distrust and dislike power that they do not explicitly use it - at least within most departments. Certainly academic departments are often flat organizations with few superiors so that there are also not many people who can exercise power over one. Power in academics is never through the power of the (metaphorical) gun - it may be over a small sherry in the professor's office, but only with one's consent.

What proof is there for the assumption that academics have job satisfaction? Indeed, a reasonable case might be put for high job dissatisfaction. The answer lies in the voluminous and fairly unequivocal but perhaps counter intuitive literature in applied psychology and management science. All the factors that are most important are abundantly available to the don: job security (tenure) is rare in other jobs; challenging and interesting work; verbal recognition; good interpersonal relations; opportunities for achievement and responsibility etc. In one study people were asked "If in one study choose the same kind of work if they were beginning their career again: 9 per cent of mathematicians, 83 per cent of lawyers, 82 per cent of journalists but only 41 per cent of skilled steel workers said yes. There may not be much money, or power, or status in being a don, but the other add perhaps more difficult to acquire, factors are abundantly available: in the job. Good. I feel much better now to cycle home: it's nearly dark and I haven't brought my light with me.

Adrian Furnham

The author is lecturer in psychology at University College London.

NERC continues its headhunt

by Jon Turney

Science Correspondent

The Natural Environment Research Council is still seeking a successor to Sir Hermann Bondi, its present chairman, two months before he is due to retire. One strong candidate recently declined the post and no appointment is yet in sight.

Sir Hermann's successor as the council's chief executive, after he leaves to become master of Churchill College, Cambridge, will face long-term problems of restructuring the NERC's work in research establishments in the face of declining funds from the science budget and commissions from outside agencies.

One potential successor, believed to be Professor Ron Oxburgh, a Cambridge geologist, negotiated over the post for some time. But he decided he was unable to leave his present duties as president of Queen's College. Other names connected with the job have included Dr Martin Holdgate, chief scientist at the Department of the Environment and a member of council, and Sir John Mason, the former head of the Meteorological Office and treasurer of the Royal Society. But the Department of Education and Science says no announcement is imminent.

Council members were hoping to be told the identity of their new chairman



Sir Hermann: leaving for Cambridge

at their meeting last week and are now concerned that no one will be found in time. Such appointments are normally announced much further in advance - the Agriculture and Food Research Council is already advertising for a £35,000 a year replacement for Sir Ralph Riley, who retires as head of the Council next April. Significantly, the DES has also appointed a firm of headhunters to find Sir Ralph's successor.

The problems Sir Hermann Bondi's successor will face are exemplified by the closure of the Institute of Oceanographic Sciences laboratory in Taunton, which was confirmed this week. The

council's statement on the closure does not point to any financial saving, but says it will be in the long-term interests of the science now carried on at Taunton.

Staff working there on sedimentation will be offered transfers to the second small 105 site at Bidston in Merseyside, while were resources will be invited to move to the main site at Wormley in Surrey.

The director of the Taunton laboratory, Mr Tom Tucker, said there was suspicion the decision had been made to placate the Advisory Board for the Research Council's wish to see the number of NERC sites reduced.

Staff at Taunton report that a quarter of their colleagues have already left the institute because of the uncertainty over its future and they expect more to follow. The main argument put by council members for the move to Bidston will help maintenance of a strong oceanography institute at Bidston, Mr Tucker said. "The short-term disruption of science is a very big price to pay for a very problematic long-term advantage."

The Taunton site will be closed in the middle of next year and the council expects some financial savings from delay in recruiting replacements to staff who do not move to one of the alternative sites.

A good grounding

by Peter Scott

Mrs Hanna Gray, president of the University of Chicago since 1978, inhabits the stratosphere of American higher education. A Fulbright scholar at Oxford in the early 1950s, she has taught at Bryn Mawr, Harvard, Yale and Chicago. A historian of the Renaissance and the Reformation, she is a director of Morgan Guaranty Trust and Atlantic Richfield and a trustee of the Brookings Institution.

Yet she has become deeply involved in some very down-to-earth issues: standards in secondary education, the place of liberal arts in an increasingly technological society and the reform of PhD programmes.

On standards Mrs Gray has taken a hawkish line. She argues that higher education itself must bear some of the responsibility for lower standards in high schools because it has reduced entry qualifications and offered too many loosely (or non) structured cafeteria-style degrees.

On liberal arts she has argued strongly for their continuing relevance in high technology society. In a recent speech in San Francisco she insisted that students with a solid liberal arts background would be best equipped to make public policy and ethical decisions on issues raised by the spread of new technology.

On PhDs she was the driving force behind a recent University of Chicago report on graduate education which recommended that PhD students should be prepared for non-academic careers as well as those in teaching and research.

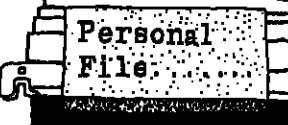
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Local authorities now face a demand from the Manpower Services Commission for a share of control over the whole of non-advanced work-related further education not just the quarter which the Government plans to fund through the commission.

The full extent of the MSC's ambitions was disclosed to chief education officers this week by the Association of County Councils. They are implicit in MSC proposals for implementing the Government's plan put to the association by Mr David Young, the commission's chairman, last week. The association has rejected them outright.

The MSC is suggesting that for the first year of the new funding arrangements, 1985-86, it will give back to each local authority the money deducted from its rate support grant on condition that the authorities submit not only proposals for how that money is to be spent, but also their plans for advanced further education programmes.

The two main local authority associations were expected to take a united stand against the White Paper *Training for Jobs* in today's debate on the



On a recent visit to London Mr Gray explained her fears about the future of scholarship in the United States. Her concern was not reduction in the number of PhD students - many doctoral programmes had become over-extended in the 1960s and 1970s - but the quality. There was a real risk of a famine of scholarly leaders.

In many areas the standards of American and of British higher education were very similar, Mrs Gray said. An aging academic profession, made worse in America by raising the retirement age, in the remorseless pressure for greater selectivity, which she believed could not be pushed too far in a world-class research university; lack of investment in equipment - some university laboratories were now outmoded compared with the best industrial laboratories.

Yet as the president of a university with 7,700 students - \$5,000 of whom are graduates an academic budget of \$260m and a world-wide reputation, Mrs Gray probably has more detachment from higher education's immediate troubles than her British counterparts.

Among her friends in London and Oxford she found "a sense of helplessness". She was impressed, and depressed, by their pessimistic rhetoric.

Authorities reunite on jobs

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Brighton Polytechnic graphic design students (left to right) George Parkin, Jonathan Satchell and Paul Rickwood select pictures for the exhibition mounted with 12 colleagues at the Illustrators' Gallery, in London.

Ulster merger near perfect, Lords told

by Karen Gold

The merger between the New University of Ulster and Ulster Polytechnic is as near perfect as possible, the chancellor of the proposed institution said in a House of Lords debate on the merger.

Lord Grey of Naunton, the present chancellor of NUU, said that the merger had been arranged with maximum goodwill and cooperation.

He said: "It is not only in university life that perfection is hard to attain in Northern Ireland. I think that we have come as near to it as we possibly can, and I hope that the rest will be happily completed."

The Lords agreed an order enabling the new university to be established. Lord Lyell for the Government repeated the points made by Mr Nicholas Scott, under secretary of state for Northern Ireland, when the same order was passed in the House of Commons: that the merger was not a test-bed for British institutions, that the new institution would be reviewed every seven years, and that there had been wide consultation. The University of Ulster's inauguration was planned for October 1, 1984, he said.

For the Opposition, Lord Prys-Davies welcomed the merger. He also welcomed new provision in the order to compensate members of staff in the present institutions who decline jobs in the new one.

All staff in the two institutions were promised jobs in the new one as near as possible in level and work to their current ones. The new provision allows staff to go to industrial tribunals if they feel their offer is unfair. The terms and conditions of compensation were still not known, Lord Prys-Davies pointed out; Lord Lyell said they would be made available shortly.

My life is largely ruled by a female, called George. George is of course a cat, legally owned by another female, namely my wife. But as I was saying - George and I are agreed that 'in Britain today it is a dog's life'.

Take MPs for example. We sit up half the night in deep discussion and we still cannot make up our minds what to do about dog licences. Our decision, (whatever it was) was almost certainly wrong. Furthermore, the dog licence business has become inextricably bound up with messes on the paving (sic).

But, as I was saying to George the other day: what kind of dog's breakfast has Sir Keith Joseph put his foot in? Are we really going to have governments prying into university syllabuses? It seems a very odd thing for a Conservative government to set a precedent in.

I haven't yet met an economist who knows any economist who was involved in the famous Hancock scrutiny. Possibly we should assume that the Permanent Secretary passed the offending Open University course books around a few old chums at the Treasury. Heavens knows what all

Business boom 'is bad for teaching'

by Paul Flather

Increasing demand for places on business studies courses in polytechnics and colleges cannot be met on current resource levels without endangering teaching standards, according to the Standing Conference on Business Education.

The first national survey just published by SCBE, which represents some 40 institutions offering degree and non-degree business courses, shows the average intake of new students has increased from about 65 in 1982/83 to about 70 in 1983/84.

Overall the survey shows that new enrolments rose by more than 8 per cent between 1982 and 1983 for BA business studies full-time sandwich courses and by more than 10 per cent for part-time BA courses. The average number of applicants per place jumped by 22 per cent, from 16 to about 20.

The survey also catalogues a great increase in the number of micro-computers used in business studies departments, using up more and more resources in teaching space, supervision and maintenance. In 1981/82 there were 140 micros in use, by 1983/84 there were 380, with the average per institution up from six to 16.

Mr Geoffrey Randall, chairman of SCBE and head of the business administration school at Thames Polytechnic, said the increasing pressure for places and the shift to new technology, was already putting business studies departments under strain.

"We can accept the current average student-staff ratios of about 14.5 to one," he said. "But we do not believe we can push it much further without endangering standards. And we are already turning down many students who would usually have accepted."

SCBE will use its survey to renew pressure on the National Advisory Body, the Department of Education and Science, and Her Majesty's Inspectorate for the resource weighting given to business studies courses to be increased.

It feels the increase is fully justified, particularly as general evidence suggests business studies graduates are more likely than all other graduates to find permanent employment. It also feels the great technological shift has not yet been fully appreciated.

The total number of architecture students in the 36 British schools has also increased, with polytechnics now recording their highest ever levels of intake, though universities and colleges are still below their peaks.

The latest annual survey from the Royal Institute of British Architects shows enrolments on part one courses up from 1,605 in 1982/83 to 1,726 in 1983/84, a 7.5 per cent increase. The total on full-time recognized polytechnic courses is up 5 per cent, and an equivalent university courses up by 2 per cent. There were slight increases in the numbers of women and overseas new entrants.

The university cuts: facts versus fiction

by Ngao Crequer

It is a myth to say that real resources for higher education have been persistently cut, Robin Morris, professor of economics at Birkbeck College, said last week.

Professor Morris, who was hosting a conference on the economics of higher education at Birkbeck, said: "Over the 10 years before 1982 the cash value of total recurrent expenditure by British universities increased by 15 per cent more than the rise in the retail price index."

The non-University Grants Committee sector probably did better. He accepted that at the same time there had been an increased volume of work and that the volume of real resource per student had fallen.

Professor Morris said there were a number of myths that he wanted to dispel. Another was that the "productivity" of the university system could not increase. The universities' productivity record had grown as fast as any sector in the economy. "The production of degrees per university teacher increase," he said.

Nor was it true that, by comparison with other countries, Britain's university system was exceptionally elitist.

ist. Although in our A level system we had possibly the strictest admission standards in the western world, the number of first degreees per head of population was about average for an industrialized country.

Students were pushed through very fast. There was a low drop-out rate. It was an efficient system.

Another myth was a demand projection showing a long-term future decline. If conservative assumptions were made about the participation rates of the sexes, and social class movements, in the year 2000 the number of entrants would be exactly the same as in 1982.

"But the upward trend in the participation of women has never wavered, and if you carry it forward you come up with a much higher number," Professor Morris said.

"If social classes three and four continue to move upwards with their aspirations towards higher education, then the effect is extremely powerful and modest assumptions will reflect huge increases."

The fallacy in conventional demand projections was that they held constant a number of factors which were policy questions, such as the student grant and the labour market.

news in brief

Schools seek college status

The University of Wales's committee to discuss a proposal to give college status to St David's University College, Lampeter, and to the Welsh National School of Medicine.

Both joined the Welsh Universities much later than the other universities and only have school status. This means that the two schools have limited power within the federated principals cannot become vice-chancellors of the University of Wales - a routing office, nor do they have membership of the Committee of Vice-Chancellors and Principals.

Abertwyth council supports the concept but its senate wants to see the outcome of the merger between the University of Wales Institute and Technology and UWIST. UWIST has declined to support a proposal, and Bangor also wants to support the status quo. Other colleges have still to debate it.

New material

A new materials centre at the University of Leeds was announced last week. The centre will bring together staff in ceramics, engineering, metallurgy and physics and will concentrate on new uses of materials in industry. It is the second new British materials centre to be set up in a year - the other is at Durham University.

Spirits level

The Government has published its response to the second House of Commons Select Committee report on education in Northern Ireland. The response says the Government is in agreement with the majority of its committee's recommendations, as with the spirit of nearly all the rest.

But it refuses to reallocate teaching places as the committee asks and to establish a separate institution of higher education based on Magee University College and the North West College of Technology in Londonderry. It also refused to partially fund Northern Ireland higher education.

Further and Higher Education in Northern Ireland. Government response to Second Report of the Education, Science and Arts Committee session 1982/83. Available at £2.25 from HMSO, 49 High Holborn, London WC1.

Takeover staged

Yorkshire Television is to become the sole sponsor of the National Theatre Company, enabling it to mount seven productions at the Edinburgh Festival Fringe next month. The company has been one of the most successful in previous years, winning five awards.

There will be some Conservative who argue - as indeed Mr Broderick does - that it is wrong for any particular professional group to be provided with jobs for life. As with conveyancing or the optician, monopoly rights should be broken, it is said. But far more significant principles are at stake - academic freedom and the right of autonomous institutions to be free of control.

British universities are extraordinarily dependent on government finance. The UGC cannot help being less and less a buffer and more and more a conduit for government desires. It is all too easy for educational leadership to yield to political pressure. In such a context tenure affords an important degree of protection. Those who work in universities should not have to keep looking over their shoulders because they espouse unfashionable views or because they are out of step with their vice-chancellor. Tenure is a small price to pay.

Keith Hampson
The author is Conservative MP for Leeds NW.

Principal attack on policies

by Olga Wojtas
Scottish Correspondent

Government policy on higher education came under attack from the principals of two Scottish universities at graduation ceremonies last week.

Dr John Burnett, principal of Edinburgh University, said the Government had made it impossible to meet its own objectives in higher education. And Sir Alwyn Williams, principal of Glasgow University, warned that there was danger of shortchanging one generation of scientists to safeguard the interests of another.

Dr Burnett said that in its white paper on higher education under 1987, the Government had said its objectives were to maintain access for qualified applicants, to ensure efficiency and economy while maintaining standards, and to shift more resources towards science, engineering and technology. This was not possible under the current purely financial policy. There was not adequate access at the moment, and numbers of applicants would not fall for another decade. Over the last three to four years, about 12,000 qualified young people annually failed to find places.

There had been a loss of around 4,000 academic staff. These reductions, staff imbalance and general frustration made improved efficiency difficult, and further economy was likely to be false economy, Dr Burnett warned.

"Moreover, if the numbers of science and technology graduates, at an average cost of about twice that of an arts student, are to increase, how will they be funded, let alone research programmes?"

At Edinburgh University, more than 100 academic posts, including some of its oldest and most prestigious chairs, had had to be left vacant, said Dr Burnett.

Sir Alwyn said that the training of Britain's science, engineering and technology students over the next 15 years would largely be in the hands of staff whose academic prospects had recently sharply deteriorated.

Over the next three years, the Government planned to shift higher education resources towards science, engineering and technology.

"We have not been told whether this shift involves the redistribution of funds between the University Grants Committee and the National Advisory Body, or in other words whether Sir Keith Joseph intends robbing Peter to pay Paul."

Dr Burnett, who said that public expenditure on higher education over that period will be significantly cut. The advisory bodies saw no alternative to the selective allocation of research funds, not only to specified fields but among favoured centres of excellence.

The "new blood" and information technology schemes already went half way towards implementing this policy and by 1987 would have replaced around a third of the science posts lost in the cuts.

But Sir Alwyn said that while these schemes could only be welcomed, they secured, or even exacerbated, the devaluation of the research capability of present staff.

In Glasgow, as in most other universities, over half the science based academics were between 35 and 45, who should now be reaching the peak of their researches.

"The way things are going, however, they are unlikely to realize their full potential for want of basic facilities," said the principal.

The NUS's preliminary evidence to the committee on standards and validation in the public sector, chaired by Sir Norman Lindop, says the committee should not be drawn into allowing some institutions to validate their own courses.

Contrasting university validation with the CNA's, the paper says that

Academics undergo new test

by Jon Turney
Science Correspondent

The Alvey directorate has appointed three academics groups to monitor progress of its £350m programme to secure Britain's position in the next generation of computer technology.

The three groups in London, Manchester and Sussex, will look at different aspects of the programme and provide feedback on how it is working. This continuous assessment of a major research and development operation is a new departure in British administration. It will be seen as a test of the science policy researchers as well as of the Alvey arrangements under study.

The Alvey programme, directed from the Department of Trade and Industry by Mr Brian Oakley, is coordinating government, industry and academic groups in work on four key areas of new computer technology: making larger integrated circuits, software engineering, artificial intelligence and human-computer interaction.

Dr Timothy Walker of the Alvey directorate said the evaluation contracts were designed to bring together people with experience of looking at technical research, at government

programmes and at firms. He suggested that asking the three groups to collaborate might sharpen their awareness of the problems of organizing joint research.

The three teams are now planning studies to start in September and the directorate hopes for useful feedback a year from now. The total effort will be equivalent to seven or eight full-time researchers, although each institution is likely to deploy a larger group of part-time workers with mixed backgrounds.

The work at Sussex is likely to use techniques for evaluating the output of research developed at the SPRU which have proved controversial when applied retrospectively in other areas such as radio-astronomy. This is the first time techniques like this have been tried for examining research still in progress and reflects the importance Mr Oakley attaches to monitoring Alvey's use of government money, amounting to some £200m over five years. The evaluation contracts run for three years initially.

Dr Timothy Walker of the Alvey directorate said the evaluation contracts were designed to bring together people with experience of looking at technical research, at government

New course for jobless graduates

by Ngao Crequer

The University of Birmingham is appealing for unemployed graduates to come forward to take up places in a new one-year retraining course in flexible manufacturing systems.

The postgraduate MSc course, jointly sponsored by the university and the Manpower Services Commission, brings together computers, robotics, microelectronics and economic management in some of the most advanced manufacturing technology in the industrialized world.

The one-year course starts in October and all applicants should have an honours degree in engineering or physical sciences. All those accepted will be fully sponsored by the MSC.

Professors Brian Haley and Stephen Tobkins, respectively of engineering production and mechanical engineering at Birmingham, who will run the course, said it would help highly qualified men and women make an important contribution to national research.

"Unemployed engineers and science graduates of this calibre are, however, difficult people to reach," they said. "As a group they are not on a mailing list, nor do they belong to an accessible organization and we are frankly appealing for help."

Professor Tobkins said: "From our point of view we want to train people in an area where there is a skill shortage. The MSC has the money to help unemployed graduates, and also to help where there are shortages."

The intention was to place 15 unemployed graduates on the course, who would all be sponsored by the MSC, plus about five more students/employees sponsored by industry, whose companies would pay for them. MSC applicants would get priority.

The course covers six main subject areas: manufacturing technology; computer-aided design and manufacture; digital control systems; robotics and materials handling; manufacturing systems and simulation; and management and financial modelling. There will be a case study for each main subject.

Most students will receive a personal allowance of £38 per week, but if married and living with a husband or wife they could receive an adult dependent allowance of £24.70 per week. There are alternative benefits for single people supporting children.



Concern over research in NAB plan

All those with an active concern for the health and vitality of public sector higher education are now awaiting, with more than a little anticipation, the autumn publication of the National Advisory Body's advice to the Secretary of State on future strategy for PSHE.

The National Association of Teachers in Further and Higher Education is at the forefront of those organizations and individuals looking to the NAB for a trenchant statement of progressive and optimistic policies with which to meet the challenges of the next decade. Nafhe's original decision, and its subsequent reaffirmation, to fully participate in the NAB machinery was in large part founded on the belief that the committee and board would be capable of mounting and sustaining powerful arguments for the defence and development of the advanced further education sector.

One area of real concern is that of the place and funding of research in the public sector institutions. Those sections of the NAB report which deal with these issues are awaited with particular anxiety. They will presumably contain the first fruits of the deliberations of the research group, concerning the balance of membership of which Nafhe and, we believe, other public sector interests are none too happy. It might be difficult to select a more prestigious and knowledgeable group concerning research *per se*. The question of the breadth and depth of their individual knowledge of the research needs of the polytechnics and colleges and their staffs is a different matter.

As an aside, this does help to illustrate a couple of factors arising out of NAB operations which are worthy of further thought. The first is the way in which working groups of the NAB board are selected by its chairman, subject only to the subsequent consent of the committee. It does seem strange that the board, chosen by the secretary of state to be broadly representative, does not select its own working groups!

The second concerns the balance and kind of university input into the workings of NAB. It is certainly right that there should be appropriate university sector inputs into the planning of PSHE. Indeed it would be a nonsense if that was not the case. It is very important, however, to ensure that such inputs reflect the widest spectrum of university knowledge, experience and opinion.

There should be no suspicion of an approach which is excessively reliant on Oxbridge and very senior academics from a narrow range of institutions only. At the same time attention needs to be given to the means of ensuring adequate public sector involvement in university planning.

To return to Nafhe's concerns over research, we look to the NAB to make it clear that research is a legitimate and necessary activity for all PSHE staff and to accept that this has quite specific resource implications. The disparity between the units of resources for teaching alone, on the one hand, and for research, on the other side of the binary line is simply unacceptable. Yet the university sector, quite properly, has considerable additional enhancement for its research role. There are no such additional monies for the polytechnics and colleges. This is a matter that the NAB must grasp.

Mike Wilkinson

The author is chair of the Research Staff Standing Panel of the National Association of Teachers in Further and Higher Education.



Caroline McKenty, a textiles and fashion student at Middlesex Polytechnic, models her sculptured body wrapping alongside a framed experimental sample included in the degree course show.

Joseph youth policy attacked

The Government's decision not to make the youth service statutory came under attack from youth organizations this week.

Both the British Youth Council and the National Council for Voluntary Youth Services say this is a significant failure by the Government to recognize the arguments of the Thompson committee, especially at a time of great financial pressure on non-mandatory provision.

The BYC and the NCVO were commenting on the Secretary of State for Education's response last week to the review group on the youth service report published two years ago.

Sir Keith Joseph announced that as a result of the report he would set up a small national youth service advisory body, as well as create a special unit on body, among others within the Department of Education and Science. But he drew back from providing extra resources or legislating on youth service provision.

Both the university and the public sector are suffering increasingly from the clash of interests between validation and professional accreditation of courses, but only the public sector has the CNA as a forum to discuss the problem, it adds.

Internal processes of universities are unsatisfactory in two ways: each university has sole control over its external examiners and internal assessment procedures are often not accountable to students.

In contrast the paper praises the

the council has promoted and maintained the highest academic standards, not least because of its public accountability.

Universities have no such external pressure, either to warn when resource reductions are threatening standards, or to ensure uniformity. "Outside the system (and often within it) degrees awarded by different universities are 'judged' according to an ascription of prestige based on a reputation possibly gained many years before, rather than in relation to known and accepted standard criteria," the paper says.

New external body should validate all courses, says NUS

University self-validation should be discontinued and all higher education taught under an external validating body like the Council for National Academic Awards, according to the NUS's preliminary evidence to the committee on standards and validation in the public sector, chaired by Sir Norman Lindop, says the committee should not be drawn into allowing some institutions to validate their own courses.

Contrasting university validation with the CNA's, the paper says that

CNA's institutional review system for helping institutions to develop a broader perspective, including resources and facilities, rather than a narrow view of academic concerns. This has put it in an indispensable position, it says.

"The NUS would contend that there is a need for any consideration of validation to examine the methods of assessment and these should be open and subject to publicly available criteria, preferably overseen by an external body not accountable to the institution itself," the paper says.

PARTY LINE

Sampling the dog's dinner

this might auger should the Keynesians ever come back into fashion. Sir Keith is a conviction politician. This Open University venture is a classic example of how seriously he takes things. For years people have badgered him about dubious bits and pieces that are taught in both secondary and higher education, particularly in the OU, where there is not the ready and challenging face-to-face contact with academics of different hues. He believes passionately in it. And finally, he has insisted on some action, for there is no doubt about the anguish in the ranks of the education officials over such a breach with tradition. They certainly do not want to get into the scrutiny and censorship of courses.

It is unfortunate that Sir Keith

intervention should come on the heels of his letter to the University Grants Committee about university tenure. There are always those who read a conspiracy into everything. What threat to Sir Keith's disciplines, his threat to amend university charters by legislation and talk of appointing commissioners will inevitably be interpreted in a broader context, namely the easy resort of the Government - whatever its principles and philosophy - to direct intervention and control.

One can understand that the Secretary of State has regard for the falling off of student numbers at the end of the century. It might therefore seem, superficially, a good idea to have a useful management tool to override a don's entrenched job security.

On the other hand, though the higher education system as a whole might contract at the end of the 1990s, I cannot believe that demand in the university sector will be much affected. Moreover, the big savings have already been achieved. So what immediate effect and would probably have only marginal impact even in the longer term. But at what cost in upheaval and ill will? Nor is it about weeding out incompetent teachers. Present incumbents are not affected and shouldn't a tougher probation period and efficiency bar be the answer anyway?

If Sir Keith were wanting to see more renewable contracts and American-style competition for appointments, that would be one thing. But this is not what the proposals are, on the surface at least, directed towards

Aid on the way for crisis-hit students

by David Jobbins

Outline plans have been drawn up by aid agencies for swifter action to help overseas students hit by crises in their home countries have received positive response from civil servants.

The agencies have been worried for some time that aid to students whose funds are cut off as a result of economic collapse, abrupt changes of government policy or revolution has been slowed by a tendency to tackle each crisis from scratch.

Now a pilot paper suggesting ways that Government departments, universities and colleges can respond more rapidly has met with general support from officials from the ministries most directly involved, including the Home Office and the Department of Education and Science.

It is the first fruit of the new consultative machinery which brings Government departments face-to-face with the agencies. It was drawn up by a working party of non-governmental organizations. Agencies such as the United Kingdom Council for Overseas Student Affairs, hope the "round table" and the inter-departmental working group of key officials will provide the opportunity to get the scheme, which depends on good cooperation between the voluntary and official sectors, off the ground at governmental level.

Important areas involving Government departments in the scheme are an official watching brief to identify "crisis" students, and coordination of an appropriate response at national level. Central to the response is the attitude of several departments - the Home Office, the Department of Employment and the Department of Health and Social Security to students who may seek relaxation of the immigration, employment, and supplementary benefit rules.

Ms Gail Taylor, UKCOSA's executive secretary said: "We are not suggesting anything which means changes in the regulations or creation of new immigration status, but making maximum use of flexibility which already exists."

The working group, termed CHAOS (Crisis and Hardship Arrangements for Overseas Students), admits that an automatic mechanism "clicking into gear" as soon as a crisis blows up is probably unrealistic. But it believes that as soon as a crisis emerges with students affected, either the inter-departmental group or individual ministries should consider what to do, preferably more willingly than to date.

"We are not necessarily looking to the Government for the solution to every crisis that arises but we do believe that the Government has an important role to play in giving a lead and playing a part in alleviating the needs of students who by its declared policy it seeks to attract to the UK," the group decided.

Also vital, according to the group, is the attitude of universities and colleges. Financial pressure on institutions caused by full-cost fees has made both students and the colleges more vulnerable to unmanageable financial losses if fees are not paid, the paper says.

It suggests that hardship funds should be established in every institution and consideration given to exploring insurance cover against loss of fee income. Students hit by circumstances outside their control should at the very least remain on course until the end of the academic year with clear institutional policy for what happens in subsequent years if the problem persists.

Anger still at full-cost fees

Great resentment is still caused around the world by Britain's insistence on charging overseas student fees at full cost. This was spelled out by Sir John Burgh, director-general of the British Council at a meeting of the foreign affairs subcommittee at the House of Commons on Wednesday. He said: "Wherever I have been - and I have travelled widely - the subject is raised with acerbity and great regret."

His evidence gave some indication of the loss of overseas students in consequence. It is shown by the change in demand elsewhere. The number of students going from Malaysia to Canada, for example since the introduction of full-cost fees has risen from 400 to 8,000. Since then the same country has also experienced a

very substantial drive for student recruitment from the USA, where fees vary widely.

In the race to attract overseas students Britain is making a poor showing probably because the importance of the exchange is not understood. France and Germany charge no fees at all for students from overseas. Russia makes great efforts to attract students and Eastern bloc countries are continually increasing their offers of places.

Sir John told the committee there was a great opportunity for Britain in developing higher education arrangements in China. "But the fact is that while 1,600 postgraduate students come to us that is opposed to 10,000 going to the USA."

Cash strain on the WEA

Courses for unemployed adults are putting such financial pressure on the Workers' Educational Association that some of its traditional provision is being threatened, according to a report by Her Majesty's Inspectorate.

The difficulties arise because teachers are normally paid partly from fee income but courses for the unemployed are labour-intensive and bring in little or no revenue.

The report on WEA provision for unemployed adults says: "The deeper the WEA moves into these areas, the greater the financial burden, and the margins available from fees generated by the rest of the programmes are not great enough to keep pace."

"Indeed, the fee-earning courses are themselves sometimes at risk. These factors are being taken into account by the department in its reconstruction of the methods of allocating grant to the responsible bodies."

Inspectors found the position worsened by the surroundings in which many courses were taught; they often consisted of borrowed or rented rooms outside educational establishments. But the inspectors praise the work of WEA tutors, particularly on welfare rights courses.

WEA Provision for Unemployed Adults, available free from DES Publications and Despatch Centre, Hove, BN1 1AZ.

Kingston allowed to keep surplus

by Karen Gold

Kingston Polytechnic has negotiated an agreement with its local authority to create a polytechnic reserve account in which money can be carried over from one year to another.

At present only the five inner London polytechnics can hold reserves, plus a handful of institutions which have negotiated special agreements. All other polytechnic and college assets are owned by the local education authority which contains them, and any surplus returns to the authority funds at the end of the financial year.

Kingston, the biggest polytechnic in

the country, is by far the largest institution to make such an agreement. It entails setting up a reserve fund within the Royal Borough of Kingston's bank account which the borough has agreed to earmark for polytechnic use only.

The borough will also pay interest on the money held there, at the current rate for local authority reserves. At present the account contains the £200,000 surplus the polytechnic unexpectedly made last financial year, after predicting as much as a £400,000 deficit the previous summer (1983). The turnaround, according to Kings-

ton director Dr Bob Smith, was because the polytechnic cut its costs by cancelling short courses.

The borough would have been hard by having to meet such a deficit in the polytechnic, and so was willing to set up the reserve fund, so that future problems could be met from polytechnic money.

"We plan to build up a cushion of at least £500,000," Dr Smith said. "The account will be a cushion between the borough and the polytechnic, so that if we make a mistake we aren't going to burden them with extra money on the next year."



Señor Pascual Barberan, a member of the Spanish Terceiro de Mar Océano - the Ancient Regiment of the Ocean Sea, exchanges gifts with Dr J. Steven Watson, principal of St Andrews University.

Señor Barberan, dressed in sixteenth century military costume, and other members of the organization, were visiting Scotland to thank the people for helping the survivors of

the Armada and of the El Gran Grifón, a flagship, which was shipwrecked on Fair Isle in 1588.

The wreck was discovered in 1970 by Dr Colin Martin, a maritime archaeologist at St. Andrews. He and his colleagues have painstakingly excavated its remains while university historians have uncovered contemporary archives about the ship and its people.

Lords severe on farming research

by Jon Turney

Science Correspondent

A House of Lords committee report this week criticizes coordination of Government-backed research on environmental impacts of farming.

The report from the Lords Select Committee on Science and Technology calls for changes to bridge gaps between the Natural Environment Research Council and the Agriculture and Food Research Councils at the agriculture and environment departments. It says the departments have neglected strategic research in the two research councils have not made enough effort to sort out the responsibilities for the grey areas between agriculture and environment research.

This is the second report from the science and technology committee in a year to criticize coordination of work which crosses research council boundaries. A report on digital mapping and remote sensing published in February made similar comments about NERC and the Science and Engineering Research Council. Both reports call on the Advisory Board for Research Councils to try to impose

multitasks. The new report says an air of mutual suspicion hangs over the research councils, who fight to guard their territory. But the committee says the problems are not severe enough to justify a major reorganization. Instead, it wants the councils and the departments to coordinate work like studies of effects of pesticides on fertilizers on wildlife and vegetation or research on ecological effects of removing hedges or burning scrub.

The report also says more work like this should be funded in universities rather than council institutes. A report from the House of Lords European Communities Committee last week also said the agricultural and environment departments were too responsive to concern about agricultural policy. But Mr Michael Jopling, the agriculture minister, announced at the end of the week that his department had set up a new unit to monitor the environmental impact of farming policy.

House of Lords Select Committee on Science and Technology Session 1983-84 Fourth Report, Agriculture and Environment Research, HMSO B1.

College lecturers back Willis

The favoured candidate to succeed Mr Len Murray as general secretary of the National Association of Teachers in Further and Higher Education will be Mr Norman Willis, currently the TUC's deputy general secretary, said to win immediate support from the executive of the Association of University Teachers when it discussed the

back last week. Mr Willis, who has previously worked in the TUC's education department, will get 73,000 votes from the conference in the capital, Windhoek, earlier this month.

The new group, the Namibian National Students Organization, was set up by more than 100 students from the university, technical colleges and schools. The organization's aim is to unite all Namibian students irrespective of colour, creed and political convictions, so that they can jointly address themselves to all aspects of life affecting students as part of the community.

New Labour man inspires optimism

from Lindsay Wright

WELLINGTON New Zealand's new Labour government, under Prime Minister David Lange, will bring in Russell Marshall to succeed the Conservative Merv Wellington as Minister of Education, inspiring a cautious optimism in the universities.

The snap election on July 14 followed a tight three-week campaign which saw the Labour leader and former lawyer David Lange campaigning successfully for national unity against the abrasive style and record of Prime Minister and long-serving finance minister Sir Robert Muldoon.

Mr Wellington shared that abrasive style and made few concessions. Mr Marshall, a former clergyman and 1960s anti-war activist, is concerned to consult widely with interested groups before new policies are implemented.

He and the new Labour government are committed, however, to abolishing the NZ\$1,500 fee for private overseas students and to making a renewed financial commitment to the student welfare schemes which had been the victims of Government cost cutting under the National Party.

For students, the best news may be the planned reintroduction of the summer employment scheme for students under which jobs are created in Government expense.

Labour has pledged to review the present student grant scheme and, though he has been careful to make no promises, Mr Marshall told student newspapers in early June that he was thinking of improving the hardship grant provisions and of abolishing the qualifications for residential grants.

The latter move would mean that all students who were living away from their parents' homes would automatically receive the NZ\$25 a week accommodation allowance as well as their basic NZ\$30 a week grant.

California is given cash boost in state budget

Higher education in California, which recently faced a gloomy future of financial retrenchment, falling salaries and rising tuition fees, will get a powerful boost from the state budget for 1984/85 signed at the end of June by Governor George Deukmejian.

The budget awards increases of more than 20 per cent to the two main components of the state's public higher education system, the University of California and the California State University, but it is noticeably less generous towards the third component, the community colleges.

Chancellor Ann Dwyndol, head of the multi-campus California State University, described the budget as the "most encouraging" in many years. He added: "Significantly, the budget not only halts a rapid spiralling of CSU student fees in recent years, but makes the first noteworthy reduction in fees in the system's history, and couples this with increases in aid funds for needy students."

Much of the credit for the increases has gone to Mr David Gardner, who became chancellor of the UC system last year and acquired national prominence as chairman of the Reagan administration's National Commission of Excellence, which has sparked off a wave of educational reforms



Lange: campaign for national unity

Labour has promised in its 1984 education policy to conduct a comprehensive assessment of university education in New Zealand and to provide sufficient staffing to reverse the present adverse staff-student ratio. Mr Marshall has been careful to explain that he expects no miracles. He has said that of the NZ\$104m that education has lost over the past three years he expects to get back only about NZ\$20m in his first year of office.

He has spelled out a list of his immediate priorities and suggested that the first years of a Labour government would hold more good intent than concrete change.

The biggest immediate change, however, is likely to be one of attitude. Mr Marshall can be expected to listen much more sympathetically than his predecessor who, though a former teacher, appeared more to hard-line moral conservatives and the "back to basics" brigade than to teacher organizations.

overseas news

Reagan baffles US scientists

from Peter David

WASHINGTON A sudden flurry of conflicting signals from the Reagan administration has baffled American scientific leaders and higher education institutions, leaving them uncertain about the prospects for improving their links with the Soviet Union.

Scientific and educational relations between the superpowers were deliberately chilled by the Carter administration following the 1979 invasion of Afghanistan and have deteriorated further under President Reagan.

Last month the administration is believed to have played a major role in persuading the National Academy of Sciences to call off a visit to Moscow designed to restore formal links with the Soviet Academy.

Immediately afterwards, however, President Reagan took observers by surprise by promising to strengthen economic, cultural and scientific ties.

Mr Reagan has now told the Department of Agriculture, Housing and

Health to expand existing agreements with their counterparts in the Soviet Union.

He has asked the State Department to be ready to renew most of the bilateral scientific exchange agreements that have been left to wither since Afghanistan, Poland and the downing of Korean Airlines Flight 107 increased tensions.

The timing of Mr Reagan's speech has been linked in the press with the approach of the presidential elections in November and renewed domestic anxiety about the collapse of arms control talks. But whatever the reasons, the president's abrupt change of heart has mystified and, to some extent, irritated the American scientific community.

Much of the irritation is felt within the National Academy of Sciences, which had just deferred its own hoped-for rapprochement with the Soviet Academy largely as a result of government advice that it would be an error to renew links while the fates of dissident physicist Andrei Sakharov and his

wife, Yelena Bonner, remained unclear.

Dr Frank Press, the academy's president, reluctantly cancelled a visit to Moscow last month when the Soviet Academy failed to respond to repeated appeals to speak up on behalf of Dr Sakharov.

The decision to cancel the trip was an acutely difficult one for Dr Press, who believes the freeze in contacts between the two academies has done a disservice to the cause of science.

But despite his personal eagerness to renew links with the Soviet Academy, Dr Press is unlikely to declare the trip on again just because of President Reagan's change of mind.

Several State Department officials doubt whether the scope of scientific cooperation will increase significantly as a result of the president's speech. Most of the agreements cover applied science and technology, areas in which the United States has been stepping up efforts to deny the Soviet Union access to American expertise.

Learning on the side

by Sarah Jane Evans

The black economy is alive and well in Spain's universities. That is the conclusion of a group of academics in the business studies department of one of Madrid's universities, the Universidad Autónoma. They calculate that the 18,000 students in their university earned between them £4.5m in the academic year 1983/84, of which only a tenth was declared.

Ninety per cent of the students said they were given money by their parents, but less than half found the money adequate. So nearly 50 per cent did some work on the side. Something over 10 per cent of them earned more

than £125 a month, but the average income was £55 a month. Only a quarter were in regular employment; the rest had one-off or seasonal jobs.

The researchers found that most of the jobs could be classified in a few categories: giving private lessons, selling, child-minding and housework. A small percentage were more adventurous: wine tasters, tourist guides, ski teachers. Most students found their jobs through friends or relations, who passed the jobs on.

The students they surveyed were in the main aged between 18 and 25 and most of those interviewed had been working for more than three years.

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Report calls for research lab reforms

from Peter David

WASHINGTON
Far-reaching changes in the structure of the United States leading research laboratories are called for in a report due to be submitted to President Reagan this week by the White House Office of Science and Technology Policy.

The unpublished report was drafted by a special cabinet committee with members drawn from the nine government departments that own or operate the nation's sprawling network of 755 federal laboratories. It recommends sweeping changes in the management of the laboratories, including better pay and conditions for scientific staff, more independence from the civil service and closer links with the universities.

America's federal laboratories, many of which grew out of the wartime Manhattan project, account for about a third of the federal government's entire research and development budget, and spent more than \$15,000m this year. But they have come under sharp scrutiny by the Reagan administration and face the prospect of major reforms if Mr Reagan is elected for a second term in November.

Many of the proposed changes will be welcomed by academic staff at the laboratories. The report for Mr

Reagan contains draft legislation to change the status of government-employed scientists and engineers and release them from the tight constraints on pay and promotion imposed by civil service regulations.

Another major recommendation calls on government departments to give their laboratories more control over their own research programmes. The report is expected to suggest that a significant proportion of laboratory funds should be earmarked for research into "targets of opportunity" identified by laboratory directors without prior approval from their masters in Washington.

The driving force behind the reforms is Mr David Packard, chairman of California's Hewlett-Packard Corporation and a close personal friend of President Reagan. Last year he chaired a major White House study of the laboratories, culminating in a report suggesting that the public was not getting a full return for its massive investment and listing "serious deficiencies".

These included excessively detailed management by parent departments, confusion about their role and, although some laboratories are managed by universities on behalf of the government, weak relations with high-

er education. In many cases, the committee concluded, the low pay ceilings set by civil service regulations prevented the laboratories from competing with universities and industry to attract the best scientific talent.

Although the Packard findings covered all federal laboratories, most attention has focused on the dozen great laboratories owned by the Department of Energy, including massive institutions such as the Lawrence Berkeley Laboratory operated by the University of California and the Argonne National Laboratory operated by the University of Chicago.

With a combined budget of around \$3,000m and a staff of 15,000 scientists and engineers, the laboratories are traditionally regarded by the Department of Energy - which President Reagan has planned to abolish when he took office - as a bulwark against hostile administrations. For that reason, the department has responded sluggishly to suggestions that it should relax its oversight of the institutions.

Mr Packard, however, has been using his personal influence to ensure that the recommendations of his committee are not extinguished by bureaucratic inertia. He has taken a close interest in the work of the cabinet committee responding to his report,

and is expected to do his utmost to persuade President Reagan to endorse the draft legislation it is sending to the White House this week.

The Department of Energy, meanwhile, is doing its best to convince the White House that it is already acting on the Packard recommendations. In response to criticism from the committee, it has asked its laboratories to provide sharper definitions of their research objectives, and it is beginning to allow laboratory directors to set aside between half and 1 per cent of their budgets to be used for "exploratory" research at their own discretion.

That, however, falls well short of the 5 to 10 per cent called for by the Packard committee. And even if the Packard recommendations receive an extra boost from this week's cabinet report, they will still face major obstacles in Congress.

One reason, according to Mr Langdon Crane, an analyst with the Congressional Research Service, is the enormous diversity of the laboratories. Speaking at a recent meeting of the American Association for the Advancement of Science, he said it was "awfully hard, if not impossible" to envisage legislation that would fit the needs of all the institutions.

Humanity under fire

Deepening an already bitter controversy, President Reagan has now confirmed the appointments of seven new members of the United States National Council for the Humanities, whose qualifications for the job had come under strong attack from Congress and the academic community.

The seven, who will sit on the 26-member committee that advises the National Endowment for the Humanities on the allocation of £140m a year for research and scholarship in humanities disciplines, were confirmed under a rarely-used procedure that bypasses confirmation hearings in the Senate.

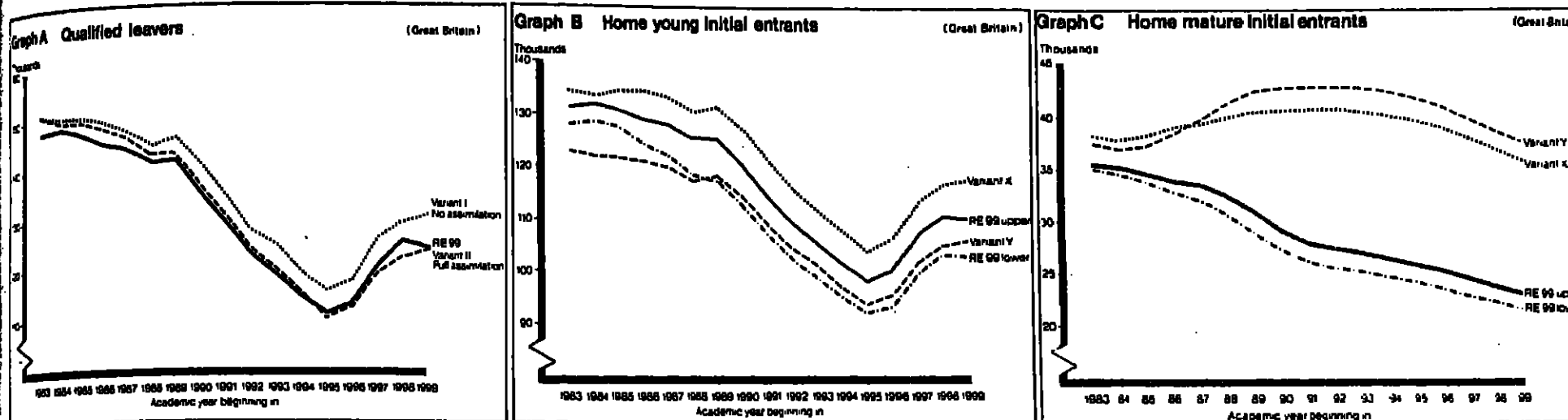
Although the appointments were announced several weeks ago when Congress was still in session, the White House confirmed them only after Congress recessed for the summer. President is empowered to bypass Senate confirmation hearings when Congress is in recess.

The move was vigorously denounced by Mrs Mary Beth Norton, a Carter appointee retiring as deputy president of the council. She claimed it had been timed to avoid potentially embarrassing confrontation with Congress. And it was probably a necessary one since the DES has accepted many of the criticisms made of its last projections but still has not come up with figures as optimistic as many had hoped. After all, there were those who believed the civil servants' methods to be so flawed that they foresaw rising demand even in the 1990s, when it had long been generally accepted that higher education was likely to see some drop in demand.

A succession of analyses by interested parties such as the Association of University Teachers and the Committee of Vice Chancellors and Principals, to more neutral bodies such as the Royal Society and the RSS, all argued that the DES had got its sums badly wrong. The effect of a sustained high birth rate in the upper social classes, increased demand from women and mature students, and a loss of more marginal factors, such as the growth of short courses, were all said to have been ignored or underestimated.

Now that the DES has published its reply, it seems that some of those errors may not have been as serious as the critics claimed. The news, for those prepared to accept the revised methodology, is better but still not as good as it needed to be for those in higher education to feel secure about the long-term outlook. In the medium

John O'Leary looks at the DES's forecast of student numbers up to the end of the century



Graphic prescription

This time no one can accuse the Department of Education and Science of disguising its long-term projections of demand for higher education. In addition to the report itself, there are 50 pages of tables, graphs and explanation for doubters to wade through. Participation indices, impenetrable equations to determine effective course lengths and a forecasting model with eight stages are all spelt out in a degree of detail calculated to gladden the hearts of members of the Royal Statistical Society.

It is an approach which should satisfy the technical critics, which included the RSS. And it was probably a necessary one since the DES has accepted many of the criticisms made of its last projections but still has not come up with figures as optimistic as many had hoped. After all, there were those who believed the civil servants' methods to be so flawed that they foresaw rising demand even in the 1990s, when it had long been generally accepted that higher education was likely to see some drop in demand.

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term (the last part of the current decade) the panic is off: student numbers should remain at least steady unless the Government acts to prevent that. But the last part of the century remains fraught with a certain amount of danger, even if the way the projections have changed in a single year does encourage the belief that they are sure to move again as time goes by.

That is made more likely by the fact that the DES now has a model which, unless it is discarded, can be used as often as ministers wish to update the picture by feeding in fresh information. The projections are not intended to become an annual event, but civil servants do expect to repeat the exercise at least twice before the end of the decade.

The temptation will be to do so more often, rather than less, since some doubts must still remain about all the factors which have brought about the current revision. The department itself lists four such areas:

- substantial upward revisions to mature student numbers;
- the most recent information available about A level achievement in schools and colleges;
- refined assumptions and methodology concerning the effect of social class differences in birth trends, and future numbers of qualified school and college leavers;
- further work on different trends in qualified demand as between men and women.

The report admits the difficulty of making reliable estimates of mature student numbers, especially in the older age groups. For the first time, "younger mature entrants" (generally those with conventional qualifications who defer entry to higher education) are separated from those over 25. The younger group is expected to continue

growing from its present size of 18,500 entrants per year, at least until 1990, even though it has been declining since reaching a peak in 1981/82.

But the older group, whose members tend not to have A levels, are even more unpredictable. Its size declined during the late 1970s, increased at the start of the current decade and then fell again last year. Again, growth is predicted, but with little confidence, and it can be assumed that much will depend on circumstances outside the control of higher education, such as unemployment and the spread of the new technologies.

Examination successes at schools and colleges might be thought to be the most predictable of the four factors which have altered the picture since 1983, but still nothing should be taken for granted. Sir Keith Joseph, Secretary of State for Education and Science, has said publicly that he hopes his introduction of the examinations field will be successful enough to increase the proportion qualifying for higher education at least marginally. It is already true that more teenagers are staying in education beyond 16 because of diminishing job prospects.

The question of class differences, which has dominated debates on long-term demand ever since the last Labour government published *Higher Education into the 1990s*, still is not settled either. Indeed, the latest report introduces a further complication in examining the case for altering the estimates to take account of mobility between classes which take place after the birth of the potential student. It had been argued that teenagers would take on the aspirations and match the achievements of their new class, rather than that to which they were born.

Since the proportion of 18-year-olds in social classes I and II is expected to

rise from 28.5 per cent in 1981 to 34 per cent in 1999, it is an important point. The DES agrees that recent trends do not support the view that upwardly mobile teenagers are fully assimilated into their new class for the purposes of A level results. But, surprisingly, this produces more students, not fewer. The reason is that full assimilation (traced on the accompanying graph A as Variant 1) assumes that most of the movement into the top social classes has already had its effect; the alternative (Variant 2) assumes that most of the benefit has yet to be felt.

Controversy has already begun over the new projections for women students, which show a levelling-off in numbers qualifying for higher education despite the fact that they are rising at the moment. The increase in the proportion of qualifiers taking up places has stopped in the last few years following a steady upward trend in the 1970s.

Ms Diana Warwick, general secretary of the Association of University Teachers, insists that all the evidence suggests demand from women equaling that from men. "The Government has really got off the fence on the issue of women's participation," she says. "There is no reason whatsoever to assume demand from women will not have increased to that from men in 10 years' time and on the basis of parity, the DES projections would fall by only 3.6 per cent."

But perhaps the greatest uncertainty arises from the fact that neither of the alternative projections takes any account of possible changes in social or economic circumstances over the period covered by the report. One is based on demand as perceived for 1981 (Variant X) the other for 1983 (Variant Y) suggesting that the most important change may have been in the supply of university places and not

demand for higher education as a whole. It is a timely reminder that Government policy will remain the crucial factor in determining the size of the student population.

The size of grants - or even loans - the levels of unemployment, the demands of employers and the pace of technological change will all have a profound effect on demand for higher education. Yet all are assumed to remain at the real levels reached in 1981 and 1983 respectively.

The promised economic recovery and technological revolution could send demand for higher education rocketing far above that forecast in RE 100. But if the new projections are right, some institutions could still be in jeopardy in 10 years' time, particularly on the lower of the two projections.

At the lowest point, in 1996/97, the lower projection shows student numbers 71,000 beneath this year's figure of 560,000. Even the higher estimate allows for a drop of 35,000 students, although the graph is rising back towards the status quo by the end of the century. The lower bound remains more than 50,000 behind today's figure even after a similar recovery.

Perhaps the greatest reassurance for those who feel threatened by such a prospect is that last year's projections could not even get within 5,000 of the student population five months later. Indeed, the higher projection was more than 10,000 out. Since the figures for the expected trough of 1996/97 have improved by at least 15 per cent in that time, optimists may feel that any talk of closures is a good deal premature.

Report on Education 100 "Demand for Higher Education in Great Britain 1984-2000", free from DES Publications, Despatch Centre, Honeycut Lane, Stanmore, Middlesex HA7 1AZ.

Technical report to DES Report 100, DES from DES, Room 337, Mowden Hall, Staindrop Road, Darlington DL3 9BG.

Under the Doctor

In her diary that it was an impossible task: the man had written so many prefaces, dedications and odd chapters in other people's works.

An example considered at the conference was a novel, *The Female Quixote* by Johnson's contemporary Mrs Charlotte Lennox. One chapter in the book has been attributed sporadically to Johnson for more than 100 years. Yet, as Professor Robert Curran of the University of Calgary pointed out, Johnson's influence was as widespread as his snipets in other people's works: a passage that sounds like Johnson may still not come from his pen, although in the case of *The Female Quixote* there is typographical and stylistic evidence that part of the questioned chapter was not written by the author of the rest of the novel.

The problem of collaboration in Johnson's work is a complex one, said Dr David Fiesman of Pembroke College, the conference organizer. Even with modern quasi-scientific methods of identifying authorship, "finding a text to look at will always depend on someone who says, 'That seems to me like Johnson'".

Solving the problem of attribution was one task for Johnson scholars in the 25 years until the next Johnson celebration, of the tercentenary of his birth. Others were a full bibliography, a new edition of Johnson's letters, and the establishment of a biographical picture of Johnson in which the inordinate influence Boswell has exerted no longer exists.

subsequent two years, giving rise to a series of contemporary cartoons and poems showing the ghost of Johnson returned to haunt his biographers - were the subject of a number of papers.

The young Johnson, working as a translator in London after leaving Pembroke College, was neither as impecunious nor as idle as previously thought.

Johnson's interests extended to history, science and the law - fields previously thought to have been dismissed or untouched by him. In particular he collaborated secretly with a young protégé, Sir Robert Chambers, in writing 36 lectures in law delivered at Oxford.

The lectures were recently discovered in the American Library of Congress by Professor Thomas Curley, of Bridgewater State College, Massachusetts, who is writing a biography of Chambers. Chambers met Johnson in 1754, just before Chambers went up to Oxford, and Johnson wrote him fatherly letters while he was there.

The lectures are shortly to be published by the University of Wisconsin, and will be a huge extension of Johnson's known writings.

They will also add to another long-running problem for Johnson scholars: that of collaboration. When Fanny Burney was asked to catalogue all Johnson's writings, she recorded

Karen Gold joins the Samuel Johnson bicentenary cavalcade



Sporting chance

from D. B. Udalgama COLOMBO

Up to 1 per cent of places in Sri Lankan university faculties - other than those of medicine, engineering, veterinary science and dentistry - will be reserved for outstanding sportspeople, musicians and artists, the chairman of the University Grants Commission, Dr S. F. Kalpage, has said.

Candidates will have to score the required minimum aggregate of marks but fail to get placement under the normal admission scheme. They must excel at national level - play cricket for the country, for instance.

A special committee comprising experts in various fields will be appointed by the UGC to select students eligible for admission under this scheme. The innovation is said to be made on a recommendation of a committee which is reviewing the policy of university admissions.

A total of 5,250 candidates have been admitted under the normal scheme for the next academic year out of 20,000 who applied for admission. Of the results of the last GCE A level examination, 25,000 qualified for admission.

"Boswell did not, as many think,

Collaboration urged on software

Countries belonging to the Organization for Economic Co-operation and Development will be encouraged to collaborate on the development of educational software, as a result of a four-day conference on education and new information technologies held in Paris last week. A start will be made on common standards and protocol.

Mr Ronald Gass, director of the Centre for Educational Research and Innovation (CERI) at the OECD, which organized the conference, said: "I feel that this is something that has to be done, even if initially it is only a question of holding several meetings and seeing what comes out of them. Certainly those countries which already have their own mechanisms for bringing together information on software development should start talking to each other."

The widespread introduction of computers into schools has become a crucial element in any strategy to bring education into the broader discussions about structural changes in the economics and social institutions of advanced nations, according to Mr Gass.

The conference was attended by some 200 government education officials and representatives from both industry and the research community. The big issue, said Mr Gass, was whether the introduction of computers into schools represented a discontinuity in the evolution of teaching practices, or whether it was just a question of enabling teachers to do more of the same. "I am inclined to believe that we are facing a discontinuity," he said.

"Education has for some time been left out of the more general debate about the impact of technology on society, but now it has been put right back into that debate. It strikes me that it is in the very forefront of this debate, since the way computers are used in schools is a more practical and more meaningful discussion than their im-



Mr Savary 'important development'

pact on abstract concepts such as unemployment or economic growth."

A second proposal which CERI would be looking at closely was that an open ended network of centres carrying out research into the use of computers in schools should be established. This would allow such research groups not only to increase the amount of communication with each other, "but to bring important research results into broader policy discussions," he said.

It was also important to examine ways in which computers could be brought to bear on the problems of maintaining the quality of teaching at a time when economic resources for education were getting scarce, an issue which was about to be addressed in a major CERI project.

M. Alain Savary, the French minister of national education who resigned this week said the development of information technologies represented "an important new aspect of educational policy". He told the conference that such technologies were helping to bring about "the democratization of



Mr Baker: teleconference learning

learning."

As a result, stressed Mr Savary, the introduction of new technologies into education in France was being carried out "as a matter of choice and not just of necessity".

In contrast, Mr Kenneth Baker, Britain's minister of state for industry and information technology, taking part in a teleconference with Mr Savary, emphasized the importance of computers in helping to educate the skilled manpower whose lack was likely to be the major constraint on economic growth in the near future.

"We are moving into a post industrial society, where information is as important an economic commodity as land, capital and labour," said Mr Baker. Disagreeing with Mr Savary's stress on the need to start from educational demands, he said it was important for the educational system to listen more clearly to the signal coming from industry.

Also taking part in the teleconference, was Mr David King, minister of education for the Canadian province of Alberta.

Yugoslav sociologist jailed

Dr Vojislav Seselj, the Sarajevo University sociologist arrested at the unofficial Belgrade seminar raised by security police on Good Friday, was last week sentenced to eight years imprisonment for "posing a counter-revolutionary threat" to the Yugoslav social and political system.

In particular, the prosecution claimed that Dr Seselj had called for reassessment of the late Marshal Tito's personal responsibility for the current economic "misfortunes" of Yugoslavia. No one since 1948, said the presiding judge Milorad Potparic, in his summing up, had dared to criticize the Party or Tito, "undoubtedly the greatest historical personality of our country," as Seselj had.

Seven other participants in the seminar, including four Belgrade University students, who went on

hunger strike in protest at their detention, have now been released pending trial.

The current clampdown on intellectual dissent in Yugoslavia is producing some odd twists. On May 23, the Croatian Central Committee's "Centre for Information and Propaganda" held a special one-day meeting to discuss intellectual "deviations". The meeting discussed a thick confidential briefing document, prepared by Stipe Suvor, the Party ideologue, who in 1982 was made a professor of Zagreb University under Party pressure, contrary to the wishes of the academic council supposedly responsible for university appointments.

Within a few days, this document was being openly discussed (and sharply criticized) in the Yugoslav media.

80 Untouchables claim bias

from A. S. Abraham

BOMBAY
Delhi University's dean of students' welfare has received some 80 complaints from Scheduled Caste (Untouchable) students of discrimination by several private, affiliated colleges in the matter of admission to courses of study. Even when they have first-class marks at the school-leaving examination, they are turned away on flimsy or vague grounds.

A female applicant to the prestigious St Stephen's College was turned down although she had first class school marks because her father did not live in Delhi. But her mother and brothers did.

Another aspirant, the son of a war widow, was denied entry by the same college to the BSc (Hons) course in chemistry without any specific reason, according to the dean, Professor G. P. Srivastava.

Hans Raj and Khalsa are two other colleges refusing admission to first-class Scheduled Caste applicants because their school education was in Hindi. The colleges felt they would not be able to understand lectures in English and the institutions had no remedial English coaching facilities. But the applicants, who had learnt English at school for some years, were willing to study in English.

While reservations are statutory in government institutions, they are not in private ones.

In an important judgment, the Supreme Court of India has ruled that no state government can reserve all the seats in medical colleges located in the state for students who come from the state itself or who have passed qualifying examinations within it.

Such reservation, the court says, cannot exceed an "outer limit" of 70 per cent of all the available places.

Groundwork for therapy

Joanna Coughlin looks on the last year as groundwork. For Joanna, studying speech therapy at the South Glamorgan Institute of Higher Education in Cardiff, coursework was mainly geared to getting acquainted with the basic disciplines she will meet later on. "We're not really sure what speech therapy's all about yet," she says, although she has done some work in nurseries and old people's homes. Everyone has enjoyed the course so far, she reckons, although linguistics has been a problem for some because it is so new to them. They tell her it gets easier to grasp in the second year.

And linguistics was the only one of her five three-hour exam papers she was unhappy about, though she will have another chance if the worst happens. "If I have to retake it I think it will be all right - I'll have all summer to learn it." The rest were more straightforward, though she was very tired at the end; the fruit of getting up at 5 am and going to bed around midnight. That worked for her A levels, so she followed the same regime this time.

Serious business extended beyond the exams to the problem of accommodation next year. She and two friends plan to move out of hall into a shared house and it fell to Joanna to try and find a new place when their first choice fell through after lengthy negotiation. Students tend to make their own arrangements as the college accommodation office isn't very helpful.

After that, it is back home to Warrington for the summer, taking in a camping holiday with the family.

Little time for leisure

No one can tell Eva Lantry that a student's life is one of leisure interspersed with occasional cramming for examinations. Her dentistry course is notorious among Manchester University undergraduates for its workload and a nine-to-five day lectures and practicals has been the norm. Since other courses' lecturers usually do not start until 9.30 at the earliest, she has been envious of the free time enjoyed by others in her hall of residence. But Eva has no serious regrets either about her choice of course or university.

Unlike some other dental courses, her first year has included some clinical work, observing and diagnosing in the university dental hospital. Her earlier desire to pursue a medical career has disappeared with the camaraderie of the course, which has provided most of her closer friends. "Everyone said you should make your friends outside the course," she says. "But we are together so much there is bound to be more togetherness."

As a result, Eva has left the giant Owen's Park, built complex for a shared house in the suburb of Levenshulme. A course colleague and three mathematics will move in with her, although she expects to return to Owen's Park for her third year.

Having passed first year examinations and managed on her grant with only a little financial assistance, Eva is well satisfied with her foray into higher education. She feels more confident generally - a change her mother noticed immediately - and intends to relax and make the most of a long vacation which she will not have next year, when the course is extended to 44 weeks.

Student who enjoys exams

Emilia Jane Wilkinson who is doing a primary BEd in religious studies at Bishop Grosseteste College, actually enjoyed her exams, particularly religious studies, as it was her first crack at the subject.

"We did get quite a lot of help as to which areas to revise though, and anyway in the first year there is not that much emphasis on exams, it is not a question of make or break," she said. Emilia Jane was not planning to work during her vacation, but before taking a holiday with her parents, she was doing a week's tour with a Girls Brigade camp in Kent, and taking a holiday Bible class.

So far she has had no money problems. On the contrary, she thinks she may have managed to save some



Our Class of '83 students have now finished their first year and *The THES* reports here on their progress. Most of our students talk of a year of hard work and tough examinations but almost all have had a good time, discovering new leisure pursuits, making friends, and in some cases opening their eyes to new opinions and different kinds of people and background. Though money problems persist for some, our students have adapted to their circumstances. So far, wider problems of career prospects have not unduly worried them. Three of our 22 students have dropped out of their courses, though none has totally lost their enthusiasm for higher education.

Alone and far from home

Kate Leonard, studying law at Balliol College, Oxford, confessed to feelings of isolation and social inadequacy during her first term. Coming from a large and closely-knit family and experiencing life away from her home in Andersonstown, Belfast, for the first time, she found adjustment to her new surroundings difficult.

"I have two brothers and two sisters. I am used to having my family around and I couldn't get used to living in one room on my own, with no one to talk to."

"I found it very difficult at first, everything was so totally different. I had been used to mixing with people of the same religion, class, background, race. For the first time I have met people from other backgrounds, of other nationalities."

To combat her loneliness, Kate, 19, focused her attention on the social areas where other students congregated. "I found I quickly started to make friends that way. Now I have quite a few friends."

Kate's major problem throughout her first year has been financial. "Life is so very expensive here in Oxford. You have two options - to look yourself away and have few friends; or you can socialize - get involved in dinners, have friends in, which means you will be short of money."

She hopes to resolve her financial problems this summer by finding employment in Oxford. She has the



promise of a month's work in a children's library if she returns to Belfast.

She is still amazed by the opulence around Oxford. "An awful lot of people here don't seem to understand the value of money, they just spend it. They can't comprehend its value, they use it merely as a tool to obtain something they want."

"The standard of intelligence is very high. I tended to feel inferior in the beginning. Now I have settled in and I feel I have as much right to be here as anybody else. I feel quite comfortable with my friends now."

Having passed her first year exams

in March Kate is now more confident about her studies. Initially, she found writing in legal terms an awkward process. She has found the tutorial system extremely beneficial and the lectures of a high quality.

Though not absolutely decided on a career when she went up to Oxford, Kate had nursed an ambition to go into journalism. "Now I am not so sure. I wasn't so happy with law in the first term, but I feel I am coming to terms with it and may decide to continue with law, but that will involve a further three years study to become a solicitor, and three to four years to become a barrister."

She has been to the Oxford Union to attend some of the debates, but has not developed an interest in personal political involvement. "I have always been apolitical, like listening to other people's discussions, but as far as my own views go I am still apolitical."

In her first year she has resided in one room in a modern hall. Her family have now accepted her decision to go to Oxford. "My brothers are very proud of me. I am first in the family to go to university from school, though my sister is in her second year as a mature student at Queen's."

"My father wasn't very keen on the idea of Oxford at first. He was proud, of course, but not really happy about my leaving home. He has been really good about it though, and I telephone him each week."

Facing uncertainty

A question mark hangs of the future of Lyndsay Fergus's course at Camberwell College of Art. It has been suggested the textiles course should be merged with a similar course at the Central School of Art. Next year's intake will definitely be directed to Central.

"I'm not sure yet what I shall do. If the course is to change dramatically, I will probably leave and try for an alternative place somewhere."

In general, Lyndsay, from Humble, East Lothian, has enjoyed her first year, finding the work becoming more demanding as the course progresses. Next year she will specialize, though she would prefer continuing to do a broad range of work for another year.

She is planning to share a flat with a friend from next term, after spending a hectic first year in the college halls of residence. "I don't think I could last out another year, there are too many people about, and too much going on. It becomes impossible to get any work done."

Financially she is "just surviving" and her parents helped this year.

First impressions still hold

Modern languages student Rebecca Dodman's first favourable impressions of the campus at Stirling have been firmly reinforced by her first year.

Rebecca, from Bratton in rural Essex, was attracted by the green open space and, given that the worst of the winter weather occurred during the Christmas vacation, has found little to alter her views.

"I suppose it could become a little claustrophobic if the weather changed down," she admits. But even this would be preferable to a city centre campus and a beddlesitter existence, she says.

As a firm policy decision she has concentrated on her studies in this, the first of a five year course, leaving little time for social and leisure activities. But her diligence has paid off with good results in the two sets of examinations so far, and there was no fear in her mind that she would continue the course.

Next year she is dropping the language in which she did best, German, to concentrate on French and Spanish, and hopes to take interpreting options at some point during the course to open up the prospects of this career after university.

Second career thoughts

ANDREW BROWNING, 19, who went to Plymouth Polytechnic to do a BSc in nautical studies in order to join the Navy, is having second thoughts about his chosen career. Having seen what other jobs the course might qualify him for, with less travelling and better pay, he is putting off the decision for a while.

He has moved out of polytechnic accommodation into a shared house for next year. He enjoyed the work, though some of it repeated what he had done at A level and has not heard his exam results yet. Andrew would have liked to sail and windsurf, but he grant would not stretch to a vessel this year. Otherwise he has tended to see friends rather than participate in a lot of poly activities, and doesn't feel the year away has radically changed his views.

JULIE HALLAS starts all over again in September, having gained a place in Newcastle Polytechnic's graphic design degree course. Julie, 19, has been on the art and design foundation course at Jacob Kramer College, Leeds, for a year. She had no exams, though she did have an exhibition, but there was enough tension waiting to hear if she had a place for next year after her first choice of polytechnic turned her down.

She realized she wanted to do graphic design during the year, because of its practicality; she admits fine artists but herself wants to do something more vocational. She doesn't know yet whether Newcastle will provide her with accommodation.



CATRIONA CORFIELD (above), studying for a BSc in textiles at the Scottish College of Textiles in Glasgow, came second in her class of 17 following end of year exams in maths and statistics, fabric production, clothing studies, science, material and produce evaluation.

But although she has no regrets, she sees the summer as a time for relaxation but she cannot catch up on the year's work. She has found herself working constantly through the first year, including weekends, with no time to revise. Perhaps she works slowly, she says, but everyone she knows works at weekends.

"The pressure is always on. All the boys are really skinny, and all the girls have put on weight. With the exams coming up, I've been living on breakfast cereal and rolls for the past few weeks."

Course projects, for example designing playing fields on grassed-over rubbish tip, have been a strain, she says, since they are generally to be completed within a week, giving no time for background reading. "Sometimes you enjoy a project, but most of the enjoyment is because it is finished."

But she thinks she has become more confident because of the project "critique" where students present their work to the class. "The first time I was so nervous and embarrassed. When I came here I was very quiet and subdued, but I talk a lot more now."

LUCAS TOMLIN aged 21 has found his life as a history of art student at Westfield College, London, surprisingly little different to his pre-student days. He still sees most of his college friends and is busy trying to write poems and plays - his first love. He jokes about some of his fellow students taking a "soft option" but has found the course quite stimulating. He complains however about the limited choice of special subjects allowed to students, complaints that apparently won him much greater freedom from the tutors. As the son of a Czech dissident, he still remains shocked by the general apathy of his fellow students.

He plans to spend the summer writing and trying to build up his balance for the next year. He is living at home, and still aims to work in the theatre.

An exhausting mixture of dancing and exams

The first exams Jean McNeil had to sit in her first year of English at Oxford came in an exhausting three day marathon of six three-hour papers. She had the additional strain of having to dress in "sub fusc" of gown, mortar board and black tie.

Jean's exams, at the very end of June, came after the end of term, and she had to have a special dispensation to stay in her Trinity College room.

Four days before the exam, she attended the triennial college ball, the only one which will be held while she is at Oxford. The double ticket, covering dinner, champagne, breakfast, jazz bands, pop groups and string quartets, cost 70 guineas. She followed the tradition of inviting a partner from home, a boy she had been to school with at Lenzie Academy near Glasgow. She insists the cost of her exquisite blue ball gown remains a secret. "I'll tell you, but you can't print it," she said.

"You do learn how the other half live. An awful lot of people here have led rather sheltered lives, and gone to public school, but you realise they are not as bad as all that." Jean and a fellow comprehensive school entrant have arguments about which of them has more street credibility.

She finds Trinity apolitical, if not apathetic. But she was among a strong Oxford contingent when she went to the London CND march last October. Leisure at Oxford means sitting about drinking coffee and saying you must go and do some work, according to Jean. She has avoided playing croquet since she doesn't know the rules. So far, she has not joined any societies



(particularly since there isn't a Scottish one), but might do so next year.

As for her second year accommodation, she says cryptically that there are "all sorts of mysterious understandings" to get the room of your choice. Second year students have both a sitting room and bedroom instead of the first year bedsit room. Jean failed to get her first choice but admits her room is "OK".

"I think I'll live off the state during the vacation. We get a vacation reading list, and we have to sign a form saying we won't work more than six weeks. Lots of people break the rules, but they are finding it really difficult to get jobs this year."

Working on the land

Kirsten Taylor-Duncan, taking a BA in landscape architecture at Edinburgh College of Art, is overjoyed to discover she has passed all her exams, gaining, according to her tutor, an exceptionally high mark in botany.

Her exams, all in a week, covered construction technology, landscape construction, history, sociology, botany, land utilization of plants and plant identification.

But although she has no regrets, she sees the summer as a time for relaxation but she cannot catch up on the year's work. She has found herself working constantly through the first year, including weekends, with no time to revise. Perhaps she works slowly, she says, but everyone she knows works at weekends.

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A little more tolerant...

Paul Read, studying law at North East London Polytechnic has become a more tolerant person since his course began. "I don't know if it is law, having two sides to an argument, or whether it is higher education having an unconvincing argument on me. Before, I would have a big raging argument with someone, I would think of someone, 'what a fool', quite arrogantly. Now I will still argue my point, but think they have a right to hold their views."

Paul has now left his digs and will soon start to look for a flat or room, either on his own or with friends. "I think one of the things when you go away to college is starting up your own home. In my digs I got on so well I became part of the family. I want to be more responsible for myself."

"My political views have not changed at all. The reason people say your views change when you go into higher education is because you don't have any strong convictions before-hand, and you start to develop your views. Students are not at all radical. It is nothing like the 1960s. They are quite apathetic."

Paul started off being very disappointed with NELP and the course but now he feels much better about it. "I am glad I came here instead of a university. I am pleased with how things are going. Before, it was early days, and everything was a new experience. Now I have settled in, I am really enjoying it... the year has gone really quickly."

"I am very pleased with the teaching. They seem to know what they are talking about. They have put a lot of thought into it. They have obviously done a lot of study for the lectures. The reading is good too, not just law books, but books with a sociological slant, so you can see law in its social setting."

His money was so tight he had to take a spare time job selling double glazing but he was able to give this up at Christmas. After the first term he became better at budgeting.

He knows a very good agency who got him at job at Easter with BP, in their stationery department. They have offered him a summer job in the micro photography department. He will take that or anything else the agency offers.

He is still waiting for exam results. He sat one three hour exam for each subject, contract, crime, the English legal system and public law. He found he missed "mock" examinations. "At school you tend to decide them but you get out of the exam situation, at least for a year, and you notice the difference," he said.

Singing for his supper

After a frenetic first year at Trinity College, Cambridge, Benny Thomas has set himself a very full schedule for the summer vacation. He has just recorded a television commercial for Wang computers along with other members of the university chamber choir. He spent the first two weeks of the month on a choir tour in France and Belgium, and has just left for a tour from Thailand to Sri Lanka for a month.

He returns to play the Mikado in a Gilbert and Sullivan Society performance at the Minak Theatre in Cornwall, before taking a week's family holiday in Hampshire. He has to sing at a Trinity feast in mid-September, and then spends a final week with friends in a college house in Iona.

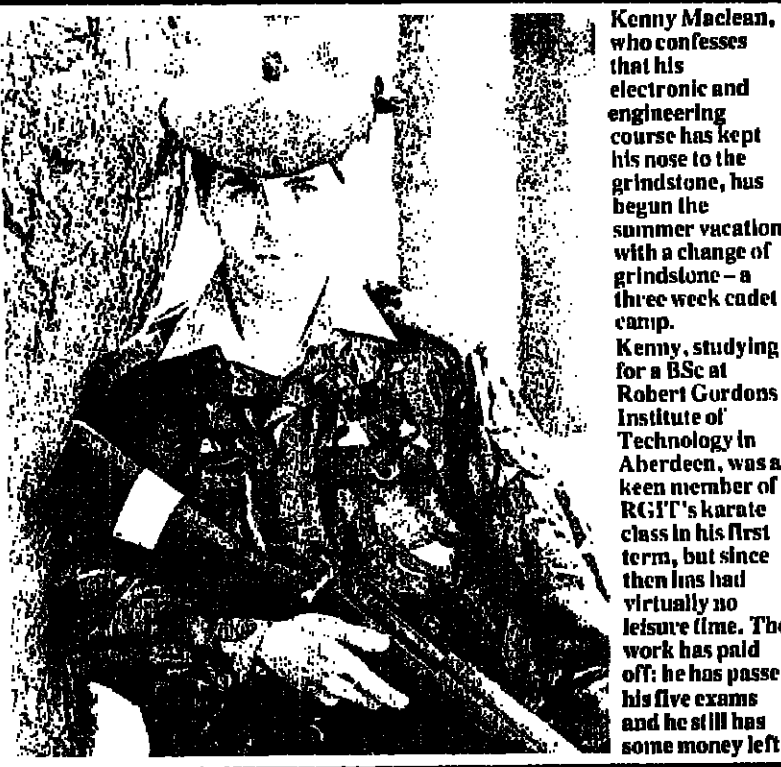
He said the first year had been tremendous fun, though the summer examinations, part one of the trip, had been tough. He knows he will not turn out an academic, but he aims to become a chemical engineer and "make lots of money." He is studying natural sciences.

He has already set himself the targets for next year, which he hopes will be less demanding academically: he wants to play rugby, perform more opera, break into the acting network, and keep up with all his friends. His year certainly ended with a flourish. As a bass with the choir he was invited to four balls. "It was pretty good news. I really enjoyed myself. Too, many strawberries." He also turned out a dab hand with a croquet mallet.

Tracy Simpson did not take up her first year Open University course. Tracy was due to begin the OU's humanities foundation course around the same time she started a new job as a secretary in Manchester.

But soon after she had bought all the books, her husband had the idea of starting a mobile pizza takeaway, and Tracy agreed that she would postpone her studies while this got off the ground. "We needed every penny, and it wasn't worth going on with the OU," she says.

She will keep up her own job for now, and then join the other business, later in the year. She still hopes to have another crack at the OU, but not for a few years yet.



Learning confidence

Rosalind Thomson, doing a BEd in mentally handicapped teaching at Manchester Polytechnic has been free from sitting exams. But she faced the far more strenuous exercise of being assessed in her teaching practice. This is fully assessed and has to be passed before students are able to continue to the next year.

"I was a bit nervous at first taking a class of nine to ten years old, but after a while my confidence grew. In fact I really enjoyed it because all the things I had learnt fell into place and it showed what a good practical course ours is. As a result I am even more determined to become a teacher."

Rosalind said. Rosalind is planning to work during her vacation, and she had friends at home on the look out for a likely job in a shop. In fact, unlike some of her who have overdrafts, she has had no money problems. "It is certainly not because I deprive myself, I seem to go out as much as everyone else," she said.

Rosalind faces accommodation problems for next year. So far, she and her friends - two from her course and three from her hall of residence - with whom she plans to share, have failed to find a flat.

Behind the camera

Adrian Silas, bubbling with irrepressible energy, is never happier than behind the viewfinder of a camera. Reading for a BA Honours in film and photographic arts at the Polytechnic of Central London, he has found that much of the work is highly practical, with the opportunity to experiment with still, film and video equipment.

The aim is to gain experience of all the aspects of film production, from budgeting through shooting to editing and team work is actively encouraged to mirror conditions in the real world of film-making.

Adrian's practical work, which continues throughout his three year course, has obviously found favour, and he has also passed his theoretical studies as well, completing lengthy essays on semiotics, aesthetics and ideology, history of film and history of photography. The first subjects he found stimulating but was less excited by the others.

Despite a complication over his grant - he belatedly found he would not qualify even for the minimum award of £410 last year - money



problems have not proved insurmountable and he hopes to find a vacation job, with two possibilities at hand. One is as an auxiliary working with geriatrics in South London and the other as an assistant with a commercial film company.

Next year with his £205 minimum grant, and with savings from holiday work, he hopes to survive at least until Christmas. "I work of necessity to survive. I have seen students blowing their grants cheques as soon as they get them and turning to their parents for money. I think this is defeatist - the whole purpose of going away from home is to be self-sufficient."

Although deeply impressed with the quality of the teaching, he is conscious that the continual preoccupation of the staff with cuts and threats of more cuts means that people are often at union or professional meetings, and therefore around less often. "They are doing this for us to keep the courses intact - you have to take the rough with the smooth," he says.

A high spot of his year was a term-time trip through Spain to North Africa with his father - a venture approved by his tutors and which produced some stunning photographs for his portfolio.

Kenny Maclean, who confesses that his electronic and engineering course has kept his nose to the grindstone, has begun the summer vacation with a change of grindstone - a three-week cadet camp. Kenny, studying for a BSc at Robert Gordon's Institute of Technology in Aberdeen, was a keen member of RGIT's karate class in his first term, but since then has virtually no leisure time. The work has paid off: he has passed his five exams and he still has some money left.

BOOKENDS

Salesman gets a new lease of life

Lynne Truss talks to Arthur Miller about the Beijing People's Theatre production of *Death of a Salesman*

Last year Arthur Miller spent six weeks at the Beijing People's Theatre mounting a Chinese production of his most famous play *Death of a Salesman*. His entertaining and thoughtful new book *Salesman in Beijing* is a production diary which records both his progress in making the play accessible and effective in Chinese terms and his day-to-day reflections on Chinese society and theatre. It is also, and above all, a testimony to his conviction that drama can cross cultural barriers, that it can serve to reveal "a common humanity".

Death of a Salesman is a quintessentially American play, yet it has been played successfully throughout the Western world ever since it was first produced in 1949. It is currently running in Tokyo and on Broadway (with Dustin Hoffman as Willy Loman), and a new production is being mounted in Paris for next season. But surely China has just too little experience of the capitalist success ethic, not to mention life insurance, hire purchase or indeed travelling salesman, for the play to be properly understood? Wasn't there a danger that the Chinese would see *Salesman* as a simple indictment of American culture?

"Obviously it's a critique of a civilization. But as it turns out—as I always maintained it would, but now it's not just me saying it—the circumstances are universal, in the sense that man in the technological society is not at home. And whether it's a so-called socialist society, or a so-called capitalist one, from the point of view of the individual trying to find some meaning in his existence, the superficial processes are different but the underlying processes are the same. The alienation, the alienation is everywhere—totally."

Indeed, he feels that the play could have particular application in socialist countries, where people feel "that life is mechanical, that it's making demands on them that are inhuman, that they have no sense of continuity with past or future, that they feel that their mortality is thrust in their faces all the time, that tradition is gone. The play is really about a man who's trying to find some meaning in life through the assertion of some success for his children."

China, he says, "practically invented the family. They know exactly what Willy is talking about when he invests his whole life in his son, and loses it. This kills them." He smiles. "It's a

Chinese story!"

Miller's belief seems to have been vindicated. He was told that with its 82 consecutive performances, *Salesman* had the longest run of any play in China. It is now in the repertoire and a television version has been made and broadcast. "One of them laughingly said it was probably seen by about 800 million people. That's probably only a slight exaggeration."

But his book is in no sense a hymn of self-congratulation. It is a fascinating account of the very hard work required by everyone involved to bridge vast cultural differences. Miller's style, as he portrays himself as the sometimes bemused "foreign expert" communicating through interpreters, is delightfully direct: "Linda nods, wide-eyed, I am not sure where I am getting. She is taking notes."

Fortunately he had no worries about the translation of the play. Ying Ruocheng, the actor who played Willy Loman, was one of the prime movers of the enterprise and had made the translation himself. "Ying Ruocheng has such a profound knowledge of English that there would be no doubt in my mind: he'd know what it was about. But he had to make choices in Chinese. You see, Chinese is a pictorial language, the Chinese deal in images almost always; a camera is a 'shadow-making machine'; it's that kind of thing. Our language is in a sense far more abstract than theirs. Well, when you start to translate feelings and ideas of another language into that it's just fascinating to think what image they could have reached for to convey your ideas."

In the book he gives the example of Willy's cry: "I won't take the rap for this! I won't become the rather less resonant 'I won't carry this blackened cooking-pot on my back.' Miller's own favourite is the translation of Willy's boast about his sales trip: "Knocked 'em cold in Providence, slaughtered 'em in Boston!" "It turns out that if you said that in Chinese they would take it literally: it would sound like a massacre. So what he said was 'They fell backwards in Providence and they tumbled on to their faces in Boston. And that apparently was equivalent to this abstract impression I was trying to create."

Salesman in Beijing is clearly concerned to describe the state of the Chinese theatre as Miller found it. The most immediate circumstance perpe-



Playing for success: Arthur Miller (top) was in Britain last week to receive an honorary degree from the University of East Anglia. (Bottom), Charley and Letta in the Beijing production.

tually to the fore is that the theatre has only recently emerged from the effects of the Cultural Revolution, during which all drama, except for "eight permissible plays", was banned. The company of the theatre Miller visited had been disbanded, with most of the actors put into menial jobs (although still being paid their professional salaries).

The actors who played Willy and Charley surprised Miller by the speed with which they worked out some card-playing business for the production. Ying Ruocheng explained: "Oh God, he and I did nothing for three and a half years but play gin under a tree all day! During the Cultural Revolution we were both shipped off to a cadre school to raise rice. We can play gin together with our eyes closed!"

As for Western plays, the Chinese theatre hadn't been open except to Soviet influence since the revolution in 1949—which means that, by doing *Salesman*, written in that very year, it seems to be picking up precisely where it left off. The decision to present the play was not, Miller says, wholly unopposed by the theatre authorities. "There are some undoubtedly there who are worried about it. They feel that the Western influence will only vitiate the revolutionary militancy of the country. Which indeed it will."

Lack of contact with Western theatre meant that there might be difficulties in cultivating in the cast a naturalistic acting style suitable for *Salesman*. Miller was adamant that he didn't want the actors to pretend to be Americans and the grow almost desperate at their adherence to the idea that wavy blond wigs would help, rather than destroy the dramatic illusion. But he did want a western "confrontational" style of acting which was not compatible with the traditional style of Chinese performance.

"They're trained to be a presentation rather than a presentational kind of theatre. It's more stylized than ours," he says. "Even though in the modern so-called 'talking theatre' (non-musical) theatre they've been

doing Chekhov for 50 years, still there is a tendency for them to look out at the audience to see how they're doing. I often wondered whether they felt it was impolite not to be looking at the audience from time to time. In the Chinese opera, for example, somebody picks up a beautiful prop, let's say a silver tray. They will start from stage left, move in a graceful arc down to the footlight and manage to tip that tray so that the audience can see what they're carrying. That's how related it is to the audience. Well, if they're going to be thinking about that playing *Death of a Salesman* we're in trouble."

Fortunately Miller had an intelligent, receptive cast who only occasionally lapsed into their old ways during rehearsals. At one point in the book he notes that when Biff promises his mother he will stay in New York and "apply himself" the scene kept veering towards sentimentality. "This must evoke some archetypal Chinese dramatic situation—the sainted mother and the repentant son—for he has to steel himself against battling his eyes and giving us a look of high and noble resolve."

Probably the biggest problem in making the play accessible to Chinese audiences was the moral ambiguity of the central character. "Willy Loman's not a particularly good fellow—morally—yet they're called upon to sympathize with him. In the Chinese theatre you don't ask the audience to sympathize with somebody who's bad. That's one of the biggest innovations of *Death of a Salesman* in China."

The worst thing Willy does, of course, is to commit adultery; Miller had to explain the "woman in Boston" to the cast very delicately. "I had to reassure them that she wasn't what they call 'bad', because that would have sunk him without trace in their estimate. They're taught having to humanize their reactions, and that is quite troublesome—but it ends up being very fascinating for them."

Miller took great pains to help the actors by finding Chinese analogies for aspects of the play that they didn't

understand. And he quickly discovered that for difficult, personal or commercial concepts, the most effective way to explain was to offer a social or political Chinese counterpart.

The "business world" of the play would make more sense, for example, if seen in terms of the career structure of the Communist Party. When elements were wholly and unambiguously American, he placed great emphasis on the actors understanding everything. "Fundamentally I want the actor to know what he's doing. So he would teach the Chinese Biff about American football, teach him to throw a 'table spiral pass' and so on."

Such instruction of course was available to audiences, but Miller upholds that the audience doesn't need to know. And, having got into the habit of explanation by analogy, he provides a British one. "For example, I cannot understand cricket. I looked at television the other afternoon here."

"I'm just too old to start. I don't know why sometimes they run and sometimes they don't run; it's just a mess. Now if we had a play in which the game were important to a character then I'd want the actor to know enough about cricket so that he'd know why he was excited about some part of it. That doesn't mean that the audience has to understand cricket."

"It's the actor's emotion that is involved here. The Chinese audience hadn't got a clue about American football, but they have exactly the same enthusiasm about something else—maybe ping-pong. If they can feel the enthusiasm, that's the main thing."

But in the book Miller can find himself looking for similarities between China and the world of *Salesman* that will help comprehension of the play—new high-rise tenement blocks in Beijing, frictions of commercialism, the new interest in consumer "durables". He concludes that if to understand the play you have to know about broken-down washing machines, then in China "they know all about that!" Interior brands of washing machine are, he says, a well-known feature in China: "You go into a store and there are hundreds of them, piled up. Nobody wants them because they know that that's a sublet. They laugh like hell when Willy says, 'Whoever heard of a Hastings refrigerator?'"

Having prepared the cast the final test, of course, was to show it to an audience. The first preview night seemed to Miller to be a huge disaster. The auditorium was filled with young couples with children who all seemed to be talking at the tops of their voices when they weren't loudly changing seats or visiting the toilets. And when the audience saw Biff and Happy appearing as youngsters in Willy's imagination (when the actors were supposedly still on stage in beds in an upstairs room) their amazement was such that "the house rose in a roar."

Miller knew that the Chinese like to talk about what they are watching (they are silent "only during intermissions, probably out of exhaustion"), but such apparent insensitivity was much for him. What he had been told was that the first audience, at the invitation of a canteen supplier, "people who were practically never in a theatre." "Every one wanted to see this play so they did a special favour to the canteen—let the suppliers come in, and they wanted to get the best cuts of meat and the freshest produce."

Audiences improved after that. "Finally the play broke through just habit of theirs and they sat quietly, and they were moved. We had a tremendous reaction there."

And the production had had an impact on Chinese play writing. "I just saw Ying Ruocheng in the States, he saw Ying Ruocheng in the States, he said before I left. He told me that their day before I left. He told me that their production created a very important influence among the young playwrights, that it liberated them from that kind of social naturalism that they had thought was the only way you could have 'talking theatre'."

There is no doubt that Miller regarded the enterprise of taking *Death of a Salesman* to China as a test of his serious one: it was after all a test of his play, which had to be considered, discussed and explained from a completely new perspective. But by relating a good-humoured detachment to writing this book, he manages to present the events in both grand and human terms. *Salesman in Beijing* is well balanced between insight and anecdote, is a thoroughly engaging work by a writer of enduring integrity and wit.

Salesman in Beijing is published by Methuen at £9.95.

On Monday, Israelis will be asked to decide whether they are satisfied with the achievements of the Likud coalition, in power for the last seven years, or whether they wish to bring back the Labour Alignment. But underlying this apparently simple contest there is a much more complex situation, related to the heterogeneous composition of Israel's population, the intricacies of the political system and the seemingly endless Arab/Israeli conflict.

Since 1948, the year of the establishment of the state, Israel's population has increased significantly and so has its electorate. In 1949, at the time of the first elections, there were about half a million voters. In the 1984 elections there will be over two and a half million voters, a five-fold increase. Whereas the 1949 population was made up predominantly of immigrants of European origin, many of whom had escaped the horror of Nazi persecution, subsequent waves of immigration brought many immigrants from Asian and African countries. To these one must now add an increasing number of native, "sabra" Israelis.

This has had a significant impact on voting patterns in Israel. In 1949, Labour came out the winner and for 29 years Labour remained the dominant force in Israel's political life, establishing the social institutions and economic structures of the young state on the basis of social democratic values.

In 1977 the changing composition of the electorate led to the victory of the centre-right Likud alliance and its re-election in 1981. While the origins of the voters was an important factor, other, more paradoxical, characteristics were also at play: in general terms, people of low income, low education and younger age preferred to vote for the centre-to-right alliance, whereas high-income Israelis, those with better education and older people tended to vote for Labour.

Many observers have focused their attention on the division between Sephardim (the Jews of African and Asian origin) and Ashkenazim (the Jews of Central and East European origin), the former being generally lower on the scale in the different components of status (education, income, etc) than the Ashkenazim. While this is undoubtedly a weighty problem (which has improved with the nomination of Sephardim to such positions as president of the state, chief of staff, head of the Histadrut Labour Federation), they should not overlook that in the present situation Israelis appear to be much more concerned with other issues such as Lebanon, the West Bank and the state of the economy.

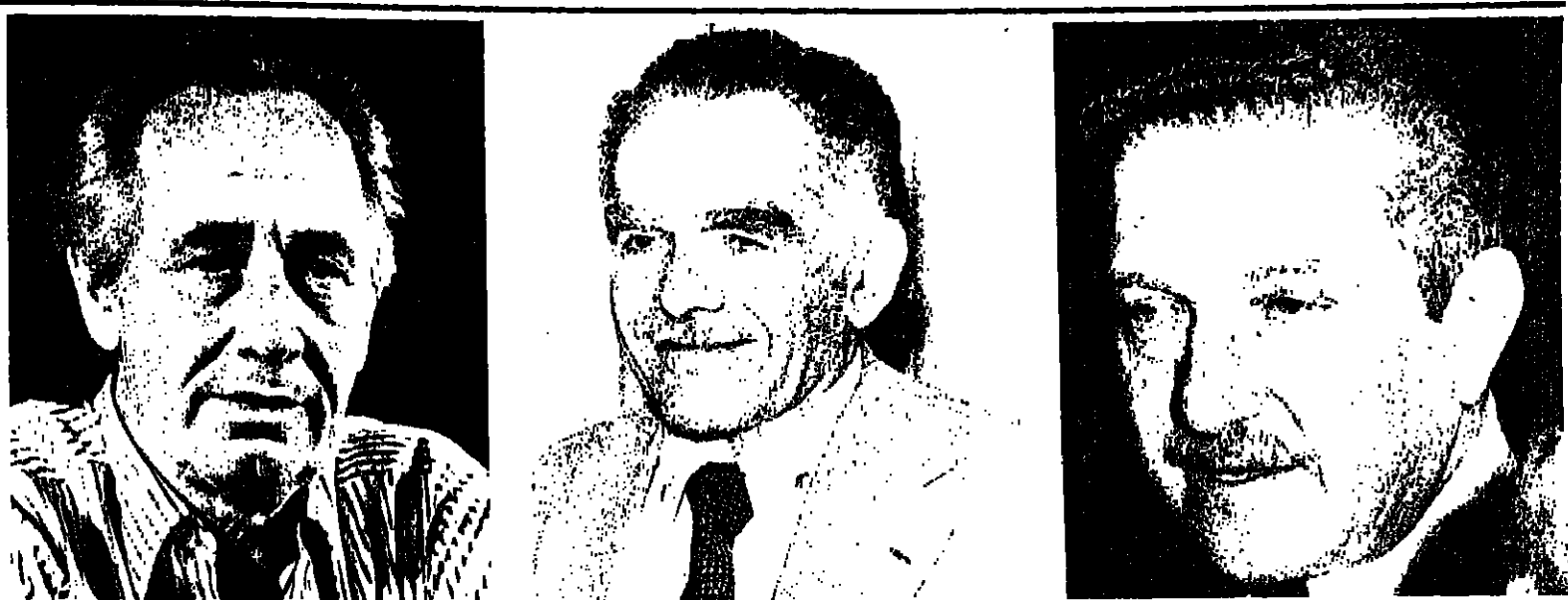
The contest for the elections should also be evaluated in conjunction with Israel's political system and more particularly the system of voting in the Knesset, the 120 members of the Israeli parliament, is elected on the basis of proportional representation, a system which has strongly influenced the nature of Israel's political life. PR was instituted in British Mandate times as a means of ensuring that all interested parties were fully represented in the Jewish institutions. In the first election to the Knesset, PR was maintained simply because no constituency system could be implemented as a large proportion of the population was mobilized in the War of Independence and the final borders not yet defined.

The whole country is one constituency, the electors vote for parties and not for candidates even though each party presents a list of candidates. If a party polls 25 per cent of the total votes, it gets 30 seats, that is, 25 per cent of the Knesset membership. The first 30 persons on that party's list are thus elected.

The system of PR has a number of advantages and disadvantages the significance of which are often discussed here in Britain in the context of electoral reform. The main advantage is that representation in parliament is spread too thinly to allow for representation of individual constituencies. As against this expression of democracy, Israel's political structure is overwhelmed by a large number of parties, as a result of which no party has ever won an absolute majority. This has always resulted in a government coalition in which minority parties exercise disproportionate influence (some call it blackmail) and thereby curtail the ambitions of the main party.

During the 29-year rule Labour was forced to concede to the demands of the National Religious Party in order to gain its support for a government coalition. The same situation arose in 1977 when Likud was forced to ally with the National Religious Party. There has been a long-standing debate in the country between partisans of a strong, effective government on the one hand and supporters of the numerous small parties interested in maintaining the status quo, on the other.

The sudden appearance and disappearance of small, sometimes idiosyncratic parties is a permanent feature of the Israeli political scene. There are no fewer than 26 parties standing for Monday's elections, and many of them will probably be elected, if only a few Knesset seats. Much interest in the present campaign will focus on such a party as Yahud, a centre party led by Ezer Weisman, which may play a role of "bulldozer" similar to that which the National Religious Party has been playing since the independence of the state.



From left: Shimon Peres, Labour Alignment leader; Yitzhak Shamir, leader of the Likud; and Ezer Weisman of Yahud.

Intricacies of an election

This Monday, July 23 1984, Israel's electors will be asked to choose their new parliament. The results will not only be eagerly awaited by the Israelis themselves, but they will also be closely monitored by Arab leaders and Western diplomats, for there is little doubt that the outcome will be crucial for the future of the area and thus the rest of the world. HENRI STELLMAN and BARRY SHENKER report.

to gain its support for a government coalition. The same situation arose in 1977 when Likud was forced to ally with the National Religious Party. There has been a long-standing debate in the country between partisans of a strong, effective government on the one hand and supporters of the numerous small parties interested in maintaining the status quo, on the other.

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Other parties in a similar position might be Tami, an ethnic list focusing on the disaffected youth by Oriental Jews, and Teliyah, an ultra-nationalist party close to the Likud. Other more incongruous lists are the Anti-Income Tax Movement and the National Tenants Protection League.

The influence of the Arab/Israeli conflict is most pervasive

There is, however, one dimension to Israel's elections which is more pervasive than any other, and that is the influence of the Arab/Israeli conflict. Israel has been forced to live on a continuous state of war by its neighbours who were not prepared to accept a Jewish state in their midst. Israelis are in a permanent state of near-emergency and as a result the subject of security is always high on parties' electoral manifestos. Two issues in particular are pressing—the West Bank and the Lebanon.

The West Bank of the River Jordan was occupied by Israel during the Six Days War in 1967. Labour, it will be recalled, was in government until 1977, has called for a territorial compromise in association with Jordan even though it set up a limited number of Jewish settlements in specific, usually unpopulated areas. The Likud claims that Judea and Samaria are historically part of the Jewish heritage and wants to retain Israel's control over them, with the local population being given autonomy over its internal affairs. Both parties, however, reject the notion of an independent Palestinian state on the West Bank as well as negotiations with the Palestine Liberation Organization, on the grounds that it is a terrorist organization aimed at Israel's destruction.

Since coming to power, Likud has mounted an active settlement policy. This has resulted in some friction between the settlers (round about 30,000) and the dominant Palestinian population (more than 700,000). Some

people argue that the friction is an inevitable consequence of the government's settlement policy, others that it is only the result of extremist provocation from both sides. The Camp David Agreement, signed in 1979, provided for autonomy of the West Bank for an interim period of five years during which the area's final status was to be determined, but the negotiations, which are meant to involve Israel, Egypt, Jordan and "interested" Palestinian parties, have reached stalemate.

Two opposing pressure groups have been active with regard to this issue. Peace Now, which was created in 1978, calls for peace through territorial compromise, while Gush Emunim (the Blue of the Faithful), whose members, to be found mainly among the 30,000 settlers in the West Bank, believe that Judea and Samaria should be annexed by Israel for religious and historical reasons. They have applied strong pressure on the government coalition for an accelerated pace of settlement in the West Bank. Recently a group of settlers, some connected with Gush Emunim, were apprehended just before committing an attack against Palestinian civilians and will be standing trial. However, this has not become an election issue; both main parties have condemned terror, from whatever quarter.

The situation in Lebanon, which has somewhat lessened the urgency of the West Bank issue, is also important. Whereas a significant proportion of the population supported Israel's invasion into Lebanon in June 1982, it would seem now that there is a strong desire to leave Lebanon as soon as possible. This is due to the high price Israel has had to pay for its continuing presence in Lebanon, the loss of many Israeli soldiers and the drain on the economy. While Labour has called for a quick withdrawal, Likud originally argued for continued Israeli military presence for as long as the Syrians remain in Lebanon. Recent indications are that the Likud does not insist on a Syrian withdrawal any more. The difference between the parties would then be in their outlook as to how best to secure Israel's northern population against terrorist attack.

There are, however, other issues faced by the Israeli electorate which more or less relate to the security problem. The economic situation is one case in point. While some aspects of the economy were not too healthy under Labour (eg 24 per cent inflation) under Likud, came to power, inflation in the last 12 months has been around 260 per cent and is estimated to reach 400 per cent for 1984. Unemployment has risen slightly. The balance of payment deficit has worsened considerably since Likud came to power, although this trend has been partly halted. Israel's system of linking wages to the cost-of-living index has not been able to keep up with inflation, so the purchasing power of the average Israeli wage earner has been eroded and it is becoming increasingly dependent on loans and grants from the

United States and Jewish communities abroad.

This has led to discontent amongst workers in Israel, resulting in loss of work days through strikes and demonstrations. However, recent agreements between the Histadrut Labour Federation and the Employers' Federation should lead to more stability in the near future. It is possible that the lower strata in the population which has previously supported Likud might be tempted away this time, since it is this strata, made up of low-wage earners, which has been most affected. The last few weeks have seen many groups in the public sector, from Israeli diplomats to local firemen, going on strike in the hope that the government will make vote-catching concessions.

Some structural changes in the economy have taken place under Likud, such as a large increase in technology exports, but this has not yet filtered through to the rest of the economy. The government originally intended to promote growth by reducing import duties and purchase tax but this succeeded in promoting inflation without other benefits. Its present policy is to concentrate on the balance of payments deficit and to limit inflationary factors by cutting back on public spending and allowing a higher rate of unemployment.

Labour's policies stress the importance of a welfare state

Labour's economic policies stress the importance of a welfare state, containment of unemployment, improvement in the balance of payments (partly through greater foreign currency controls) and a reform of the tax system. Labour also argues that a quick withdrawal from Lebanon, a freeze on settlements in the West Bank and less government support for religious educational establishments will have an immediate impact on inflation.

Lately there has also been much debate in Israel on the basic nature of its society. After 36 years, Israel has now passed through the phase of developing nation and, notwithstanding its many serious problems, has settled down. For most of its inhabitants it is possible to go about daily life in the way most people do in other "normal" countries. Military problems do play an important role, but Israel's army's strength and the peace with Egypt have somewhat diminished the predominant security problem and allowed other factors to come to the fore.

Two contradictory trends have emerged here. On the one hand there is the desire to shake off the burden of the past and to live the kind of life observed anywhere—a job security, a decent standard of living, educational opportunities and efficient social and medical services. This has recently expressed itself in a burst of consumerism with the expectation that the

government of the day will deliver the goods. No single party can now appeal to the electorate to make sacrifices for reasons of national emergency.

On the other hand, fear has arisen that by taking this direction, however understandable and legitimate, Israel will lose its soul and as a result suffer consequences from which it will never recover—economic, military, political, social and moral. For this reason, many debates which are overtly about specific political issues are in fact about more fundamental considerations. Peace Now, Gush Emunim, increasing religious fundamentalism—it is no coincidence that all these trends are on the increase at present. The relationship between state and religion, the effect of annexation or non-annexation of the West Bank and other issues are seen as affecting the basic nature of Israeli society.

The settling down process has also allowed the plurality of Israeli society to come more to the fore. We have mentioned earlier the ethnic problem of Sephardi Jews versus Ashkenazi Jews. There is also a large non-Jewish population in Israel made up predominantly of Arabs, loyal to the state but feeling alienated from it before or after the 1948 Arab/Israeli conflict.

Israeli Arabs number some 700,000 and represent 17 per cent of the total population. No wonder, then, that no effort has been spared to woo these voters. Almost 70 per cent of Israeli Arabs voted in the 1981 elections (in earlier elections 80 to 90 per cent voted); the support for Rakach, Israel's Communist party, declined to 37 per cent (resulting in four deputies in the Knesset) while the support for Labour went up to 29 per cent. Many Israeli Arabs feel disappointed with their status in Israeli society and no doubt see the elections as a means of improving their standing. They may turn in greater numbers to Labour primarily to oust Likud from power. Alternatively, they may vote for Ezer Weisman's party or for the newly-formed Progressive List for Peace which, for the first time in Israeli history, offers a fully integrated list of Arabs and Jews.

Last month the Central Election Committee, which supervises the elections, banned the Progressive List for Peace. The party was disqualified because the committee found it had included "subversive elements and tendencies and key persons on the list act in identification with enemies of the state". Earlier the committee had decided to ban the extreme right-wing Kach party on the grounds that it advocates racist and anti-democratic principles and openly supports acts of terror. Both parties appealed to the Supreme Court which reversed the ban on both groups, since, it ruled, the committee could only disqualify parties on technical grounds and not on political grounds.

Israel's eleventh general election this Monday cannot thus be reduced to a simple contest between two major parties. There is a much more complex situation underneath with an array of problems, tensions and conflicts. Yet Israel's democracy is undoubtedly stable, and this, in an environment of undemocratic and unstable regimes, is a record which even the Jewish state's strongest critics will have to admit is unusual.

Henri Stelman is director of the Academic Study Group on Israel and the Middle East. Barry Shenker is a writer on Israeli and Jewish Affairs. Copies of a detailed guide to the Israeli election can be had for £2 from the ASG, 202, New North Road, London N1 7BL.

NUFFIELD FOUNDATION

Awards to Newly Appointed Science Lecturers in Science, Applied Science and Engineering

The Trustees of the Nuffield Foundation are offering a limited number of awards of up to £4,000 to newly appointed University and Polytechnic lecturers in Science, Applied Science and Engineering. The object of the awards is to give assistance to such lecturers in the early stages of their independent research careers. Awards will be made competitively and preference will be given to lecturers wishing to explore novel and original lines of research that may not yet be at a stage suitable for Research Council support.

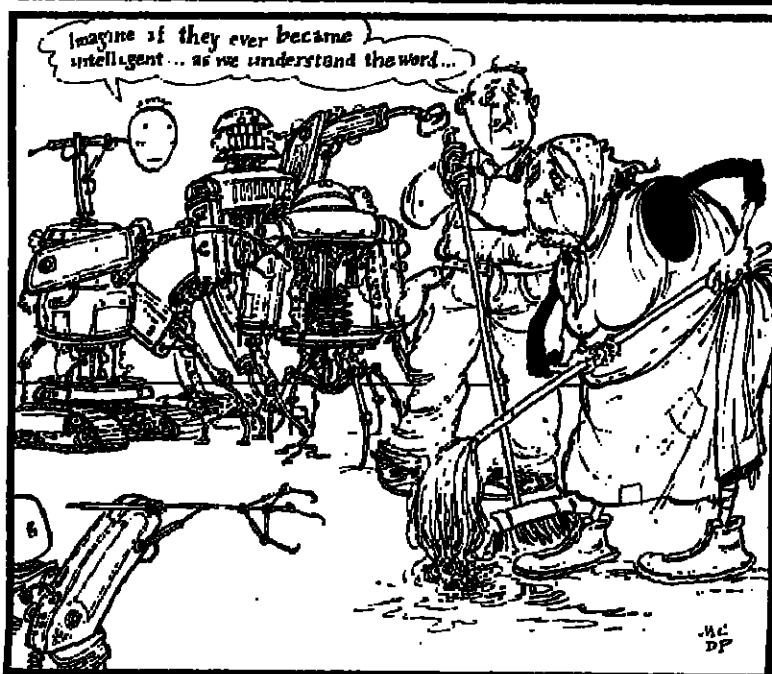
Eligibility

Applicants must be newly appointed to lectureships or equivalent posts in Science, Applied Science, Mathematics, Engineering or Medical Departments. Candidates must apply within 12 months of taking up their posts and may apply between the time of being appointed and taking up the post.

How to apply

There are two closing dates a year: 31st March and 31st October. Applications must be on the appropriate form, which is available from the Nuffield Foundation, Nuffield Lodge, Regent's Park, London NW1 4RS.

The scheme is only open to applicants from institutions within the United Kingdom.



From the Turing to the ridiculous

At what point does a machine have intelligence, Philip Leith asks

One of the mainstays of the belief in artificial intelligence has been what has been described as the "Turing test" — a test used as a means to determine just when the "intelligent computer" had been arrived at. The test was concocted by Alan Turing, a brilliant mathematician, whose work has influenced the theoretical aspects of computer science for more than a generation.

While Turing's mathematical work is central to current computing thought, his work on artificial intelligence is seen in a slightly less flattering light by mainstream computer science; particularly his description of how we might recognize intelligence in a machine.

The Turing test is relatively simple, utilizing two rooms, three terminals and a computer. The terminals are set up in one of the rooms, where the "subject" is placed. He is told that one of the terminals is connected to a computer and the other to another terminal controlled by a member of the experimental team. The task set for the subject is to determine which of the terminals is connected to the computer; if this task cannot be carried out by the subject, Turing stated, we can conclude that we have produced the intelligent computer.

But of course, this is a limited view of the recognition of intelligence which omits several possible scenarios. For example, we might programme the computer to repeatedly state, "I'm bored. I will not answer that question" and tell the experimenter on the end of the other terminal to behave in a typically "formal" way which might suggest to the subject that he is the computer. What chance the subject then? The problem is that the experimenter can so easily affect the result of the experiment, whether accidentally or deliberately.

The problem about just what "intelligence" actually is is problematical for a number of reasons. It is, despite the claims of Eysenck and his IQ test, not a simple quantity to measure; and what metaphysical habit of turning to sand and disappearing from our field of view. It does, though, exist (we are for example, more "intelligent" than the rest of the animal world). Whether it exists in machines is, though, a difficult question to answer.

The Turing test has caused a huge number of research projects to be started, each of them attempting to work towards the easy communication between man and computer. One of the first, and best known, was the ELIZA program by Professor Weizenbaum of the Massachusetts Institute of Technology. The ELIZA program accepted input from users and by judicious programming (known as "clucking" in artificial intelligence) output statements which seemed to be answers to the user's input. Weizenbaum considered his program a novel toy but began to

become worried when his secretary asked him to leave the room because she was just about to ask the program for "advice".

Turing's idea, though, was not entirely original. Many philosophers have spent time on the thorny problem of deciding just what intelligence actually is and have seen the "intelligent machine" as an aid in this task. Turing's idea was originally proposed by Descartes. Whereas Turing thought that by the year 2000, a subject would have a 70 per cent chance of being able to distinguish between man and computer, Descartes assumed that the machine would eventually fail the test since it could not "reply appropriately to everything that may be said in its presence". Galileo, incidentally, claimed the correct method to distinguish between a man and statue was to tickle them with a feather.

An updated version of the Turing test has been carried out by several psychiatrists in California. Their task was to programme a computer to behave in a manner similar to a paranoid. The investigation then examined whether qualified psychiatrists could determine the difference between the computer's paranoid verbal behaviour and an actual paranoid responses. The patient used in parallel with the computer was a 22-year-old, single, Caucasian, native English-speaking man who was a psychiatric patient at the University of California Neuropsychiatric Institute. The patient had "fixed delusions of grandiose powers and controls and felt persecuted by the government, underworld leaders and the medical establishment". The patient was "paid in advance".

The results of the tests were that five psychiatrists reached five correct and five incorrect conclusions in deciding whether they were interviewing a paranoid patient or a computer.

Paranoid verbal behaviour of not one researcher into the sociological aspects of computing has argued against such Turing tests. The researcher, Dr Brian Bloomfield of the Open University, has suggested a test which we might call the Bloomfield test. The Bloomfield test requires a computer and a Department of Health and Social Security office. It sends the computer into the office to sign on for supplementary research. If it manages to overcome the waiting, bureaucratic behaviour and administrative rules and actually receives its first payment of benefit it has successfully passed the first part of the test. To really show intelligent behaviour, though, it must manage to get a job on the side, unbeknown to the DHSS, to increase its weekly income.

We await the day when the Bloomfield test is successfully passed.

The author lectures in the faculty of mathematics at the Open University.

Reticular research

Alan Wilson on the discipline of disciplines

There is an old joke in which it is said that whenever you ask an historian a question, the answer is always the same: "Not my period". Are we now getting near to the point that any academic answers a question by: "Not my field"? That is, not my specialism. If there is any justification for this, it is in the name of research: that we all need to be experts in something and this involves, especially with expanding knowledge, a high degree of specialization within a sub-discipline. I want to argue that there is an element of truth in this picture but that, as a consequence, research productivity is lower than it should be. It is often argued, in fact, that the most interesting research is done at the boundaries of disciplines, even in the cracks between them.

Disciplines are products of historical and social processes. They are often organized in different ways in different countries, even to some extent, in different universities in the same country; but there is a core structure which we recognize and work with but rarely analyse. This structure can be understood in relation to three characteristics: the objects of study, scale and approach.

The first is self-evident and, at its broadest level, produces the familiar subdivisions of, say, physical sciences, biological sciences, the social sciences and the arts. Scales range from elementary particles to planets and stars; from chemical components of cells to organisms; from individuals to institutions and societies. Some disciplines within a field are distinguished from others by scale — microbiology from botany and zoology for example; others operate at several scales — say micro and macro economics.

An approach is a set of methods and concepts which provides the key to understanding in a discipline. Different approaches characterize different subdisciplines: a "rats-in-mazes" behavioural psychologist, for example, is using a "scientific approach" to the same subject matter at the same scale as a Freudian psychoanalyst who uses quite different methods.

These three characteristics provide a key to the classification of disciplines and their subdivisions and a basis for understanding the variety of classifications which exist. They define a three-dimensional abstract space, and disciplines can then be seen as (overlapping) regions in such a space, centred on particular nodes or sets of nodes. Sub-disciplines and specialisms are simply smaller regions. A research field which lies in the cracks between disciplines is a small region of such a space with a focus at the boundaries of two or more disciplinary regions. Is this likely to be more interesting territory than a disciplinary centre-of-gravity? Before attempting to answer this question, it is useful to complete the first phase of the argument by exploring more deeply the basis of the disciplinary structure which exists.

As a discipline develops, it has a life and pattern of evolution which is determined by a coalition of practitioners and the nature of the competition between each coalition and the rest of the scramble for resources. Survival strategies in these circumstances are perhaps inherently conservative. The role of the discipline, its niche, should be stable and well-defined; journals and conferences are organized within the discipline; most career ladders are associated with conformist behaviour within the discipline. The approaches used will be "normal" in the Kuhnian sense. In most universities, these characteristics are formalized in departmental structures. Appointments will usually be made to fill gaps in teaching areas rather than to strengthen research. A major consequence of this way of organizing disciplinary structures is that they are formed and maintained in a most research will be correspondingly narrowly-focused. If the edifice of a discipline is accepted and a department is a collection of specialisms, "normal" research will be essentially "normal" in the wall. This is further reinforced by a drive to reduce to a small part of the disciplinary "holistic" object of study which will be at one scale and will rarely engage with questions of relationship between scales; and will use a single, typically already existing, "approach".

The picture developed implies a network model of knowledge: there are nodes defined by object of study, scale and approach, and there will be obvious links connecting some of these nodes. Disciplines, we argued, were overlapping "regions" in this space, with "shapes" determined by social interaction. A research problem will typically focus on a node or clustered set of nodes in this space. This cluster might be centred in a discipline or it might be at the boundaries.

But we can now begin to see a new kind of research problem: one that involves an area of the network. The picture for this kind of problem is more like the organization of the brain itself: quite a broad area might be involved in the accomplishment of a particular task. We might steal an adjective from neurophysiology and call this a reticular problem.

We can now extend the original conjecture. It may be that research in the cracks between disciplines will often be more interesting than discipline-centred research. But reticular problems may be more interesting still! It is also worth noting that there is no way in which this kind of analysis can be avoided: what we are doing is an intrinsic feature of the map of knowledge. When the map is drawn in a certain way, say to reflect current organization, this map will have disciplinary nodes, research nodes and reticular areas. If it is redrawn, say as new disciplines are formed around reticular regions which can then be redefined as new nodes, then the new map will have new kinds of reticular problems! The implication is that as well as our disciplinary skills, we are also likely to need reticular cross-disciplinary skills to be "original" in research. Indeed, it may be that it is these latter kinds of skills which consti-

tute what we call "imagination". The breadth of an individual's "skill network" might be taken as a measure of imagination and as a capability for problem-solving.

It is now possible to begin to draw some conclusions from this analysis. First, it is necessary to reaffirm that there will be a large number of problems which are nodal in character, which often involve high levels of skill but not high levels of imagination — useful bricks in the wall. It remains a matter of historical research to establish whether nodal problems at disciplinary boundaries are typically more interesting than those at the centre. But the main new conjecture is that there is a class of reticular research problems which are inadequately formalized and tackled.

In relation to the three characteristics used as the basis of analysis, such problems can usually be identified by taking a more comprehensive slice of an object of study, by being prepared to relate analysis at different scales and by being eclectic in making an attack on the problem by assembling ideas from a range of approaches.

A recognition of the reticular nature of the problem will encourage the mind to draft about and to assemble novel "packages" to solve problems. The argument has been cast in terms of basic rather than applied research. In engineering, medicine and other professional fields it is often argued that a distinctive kind of activity is involved: synthesis rather than analysis. It is interesting to see this as another kind of reticular thinking — assembling elements of the solution to a problem from diverse sources — so that synthesis is not as different as might be thought from some kinds of analysis.

The implications of the picture are serious. In some ways, reductionist, nodal research strategies can lead to fragmented views of subjects and appropriate linkages are not made. One of the worst products of this kind of organization, for example, is compartmentalized medicine. A patient often wants someone to take a holistic look at his or her problems. What is usually on offer is, literally a specialist. If the problem happens to coincide with the skill, that is fine; but there are many cases where a different approach would be more valuable.

Of course, it should also be said that the picture is not wholly pessimistic. Much is accomplished in universities, if only because many important reticular problems are tackled. The most successful such work generates new nodes — new disciplines, new departments, though this is more difficult at a time of financial stringency. There are developments from quite distinct sources which universities need to learn from, and indeed some times do. The feminist movement, for example, has drawn attention to the lack of research on women. Such research is essentially reticular: ideas need to be drawn from many different areas, new concepts developed and a new synthesis achieved.

There are interdisciplinary societies in some fields. New forms of academic organization have been introduced in many polytechnics, and universities can learn from these. A key point in this: any mode of academic organization will not be the "best" indefinitely. Reappraisal is necessary from time to time.

But given the usual inertia and conservatism could anything be done in the short run to accelerate the pace of research in universities, particularly in tackling problems of a reticular nature?

Elements of broader education would help: teaching which attempted to outline network structures and connections to other disciplines as well as the more usual compartmentalized elements of single disciplines. The teachers who attempted this might themselves become better researchers. More importantly, future generations would be better equipped.

New kinds of collaborative research would also help. If we cannot radically change the breadth of our individual visions, we could seek out teams which brought a set of skills, a composite network, to bear. To some extent this can be achieved by the development of inter-departmental centres in universities; but it will also require inter-university collaboration.

Publishers and editors can make a different kind of contribution. It is difficult enough, many will argue, to keep up with the literature within one's own specialism. How on earth is it possible to extend that network and develop reticular skills? We must recognize the necessity of sampling the literature, and of encouraging commentators to do this and use the reticular imagination to offer the initial guides for others. With a whetted appetite and some filtering, further development is then more straightforward. So this demands new kinds of books and journals and the development of markets for these outside the usual disciplinary channels.

Finally more priority needs to be given to the articulation of research fields in particular areas — not to generate the *carte blanche* policy pronouncements, but to produce material for debate. Again, we must look to research councils to play major roles because they are more likely to be able to work with the notion of a cross-disciplinary map of research priorities. Indeed, their committee structure in many cases now cross those of traditional disciplines.

But it remains hard to make these structures work: we all tend to turn up at meetings wearing our disciplinary hats. It may well be fruitful for a longer run for research councils to fund more research-on-research to articulate the network of knowledge and the way it is developing; the way "fundamental" research relates to applied demands (or doesn't).

It would be fascinating also, having drawn the map (and repeated the exercise at intervals), to chart the numbers of researchers in different parts of its territory. My guess would be that disciplinary nodes "cracks" less heavily populated; less so "regions"; reticular regions less so again. Would such research also support the initial conjecture that it is the smaller reticular regions which lead the way in major innovation? There is a substantial problem for historians there.

Work of this kind would certainly improve our understanding of some important problems.

The author is professor of urban and regional geography at the University of Leeds.

Towards economic freedom

by Anthony Quinton

Hayek on Liberty
by John Gray
Blackwell, £19.50
ISBN 0855307108

When one considers the substantial bulk, the originality and the broad range of disciplines drawn on and contributed to in the writings of Hayek, over a period of sixty years, he does seem a neglected figure. Identified in the minds of most readers as the Cassandra of the impending statist outrages of the Attlee government, he acquired none of the fame of his friend Karl Popper or his cousin Ludwig Wittgenstein. Nevertheless John Gray includes, in what must be the most generally accessible book on Hayek so far, a list of publications "about or relevant to Hayek" that is nearly nine pages long and must contain between three and four hundred entries.

Until his and the century's mid-forties Hayek was an Austrian economist, in both senses of that phrase, until 1953 when he came to the London School of Economics. Up to the appearance of *The Road to Serfdom* his work had been almost wholly confined to academic, theoretical economics. In that field the main idea with which he is associated is an account of the trade cycle which competes with that of John Maynard Keynes. Where Keynes saw the cure of depression to be the stimulation of investment by governmentally inspired expansion of credit, Hayek attributed the over-riding of the economy to over-indebtedness by banks; a respectively cheerful and dismal portrayal of the same connection between the availability of credit and the level of economic activity.

With *The Road to Serfdom* Hayek emerged from the closet of academic respectability into the open area of political polemic. His message was welcome to the property owners who had had to finance the military and social extravaganzas of wartime and to those who believed they would next be called on to bear the burden of the burden of the freedom to produce. Intellectual freedom is needed to protect inventiveness, the discovery of new methods and objects of production, of new markets and possible tastes. Personal freedom is needed for the "experiments in living" which inventively enlarge the range of possible human satisfactions.

The obvious negative implication is that the scope of government activity must be confined to preserving conditions favourable to the spontaneous workings of the market. It must act as a referee and not intervene in the game to help the losing side, as a games master might at a school for small boys. Hayek's highly formal theory of law, which he attempts to deduce from

Hegel's influence

Dialogue with the Dialectic
by Norman Levine
Allen & Unwin, £25.00
ISBN 004 9090127

Lenin believed that for Marxists the study of Hegel was not simply valuable but obligatory. He himself made an exhaustive study of Hegel's *Science of Logic* and other works while isolated in Berne during the Great War, and it was this study which provided the basis for his *Capital* and his *Grundrisse* (which Marx subsequently discarded). Levine makes a task more difficult. Marx says many illuminating things in his first chapter, but without having thoroughly studied and understood the whole of Hegel's *Logic*. Consequently, half a century later, none of the Marxists understood

Norman Levine shares Lenin's view of the importance of Hegel and dialectic in understanding Marx's thinking but fails to measure up to the task set up by Lenin. Levine does not do a convincing philosophical account of Marx's method of argument, but this is, none the less, a brave

economy's transcendence of individual reason, anti-liberal in its hostility to government intervention, anti-conformist in its enthusiasm for change, so long as that change was the outcome of individual enterprise. In subsequent years there have been three volumes of an abstract theory of law, which he sees as the indispensable precondition, not the opponent, of liberty and two volumes of essays on topics in philosophy and the social sciences. Now, at 85, John Gray reports, he is at work, back in central Europe, on a three-volume book on the illusions of socialism.

Hayek has responded more profoundly than anyone to what may be called the macroeconomic vision of the workings of the free competitive capitalist economy. In a mass of individuals, intellectually and morally limited by ignorance and by self-interest, combine in a way they do not have to understand, to bring about the largest possible satisfaction of the wants of all. Where Bernard Mandeville argued that the selfish pursuit of private ends was the best way to bring about general well-being, Hayek's theology of the invisible hand emphasizes the way in which the market institutionally combines the vast mass of detailed knowledge dispersed among individuals which no one mind, or group of minds in a central planning committee, could conceivably master. The Popperian conclusion of the impossibility of large-scale or utopian social engineering is reached by a different, and less circuitous, route. What Popper traces to ill-founded historical prophecies, based on errors about the proper methods of history and the social sciences, Hayek attributes to the learned-like vaingloriousness of planners who suppose themselves to possess superhuman powers.

The liberty, therefore, that Hayek is most concerned to argue for is economic liberty, as exploited in starting new enterprises, changing occupations and, as a result, moving from one place to another. The liberties that most concerned Mill, those of thought and expression and of "tastes and pursuits". In other words in styles of personal life, have to be carried on the burden of the freedom to produce. Intellectual freedom is needed to protect inventiveness, the discovery of new methods and objects of production, of new markets and possible tastes. Personal freedom is needed for the "experiments in living" which inventively enlarge the range of possible human satisfactions.

The obvious negative implication is that the scope of government activity must be confined to preserving conditions favourable to the spontaneous workings of the market. It must act as a referee and not intervene in the game to help the losing side, as a games master might at a school for small boys. Hayek's highly formal theory of law, which he attempts to deduce from

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attempt to deal with the problem of dialectic in Marxism over its whole sweep from Hegel to Mao.

The difficulty that the student of Marx, such as Lenin or Levine, has is that Marx never had the opportunity to explain to the world, as he always hoped to do, what it was that he most found of value in Hegel. Levine fully suggests that Marx found in Hegel the concepts of negativity and contradiction which allowed him to outline the inherent deficiencies of the capitalist economic form. But Levine has great difficulty in showing in detail how Marx put into effect these Hegelian propositions. In taking as his main text for examination the introduction to the *Grundrisse* (which Marx subsequently discarded) Levine makes a task more difficult. Marx says many illuminating things in his first chapter, but without having thoroughly studied and understood the whole of Hegel's *Logic*. Consequently, half a century later, none of the Marxists understood

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BOOKS

a Kantian conception of law is essentially universal and impersonal, is brought in to support this conclusion from another direction. In the same spirit he is contemptuous of the chief polemical idea in contemporary political controversy. Social justice, he maintains, is an incoherent concept. To suffer injustice is to be treated by some responsible person in a way that does not conform to law. To be comparatively disadvantaged by the workings of an impersonal system may be a misfortune but it is a simple misuse of words to describe it as an injustice.

John Gray's principal aim in his short and lively *Hayek on Liberty* is not so much to expound his subject's views about liberty as to show that his ideas, over the broad range of disciplines that they figure in, constitute a system. As a result his two best known books, *The Road to Serfdom* and *The Constitution of Liberty*, are not much attended to in the text, most of whose references are to his trilogy on law, his two late essay collections and his *The Sensory Order*. Gray's organizing idea is, I think it is fair to say, that Hayek's philosophy underlies, and sustains, his thought about politics and the economy in the way that the opponents of Leo Strauss's content that Hobbes's materialist philosophy underlies his political theory.

I do not think he succeeds in showing that it does and I think further that it is quite a good thing that it does not, since the philosophy, as Gray represents it, is not very compelling (although I realize that what follows from a falsehood need not itself be false). Gray attributes to the influence of Kant Hayek's belief that we do not perceive things as they are, that perception is a very complex and indirect process to which the perceiver contributes creatively. Order, on this view, is something we contribute to the world of our experience, by the application of categories and principles of interpretation which, unlike Kant's, change over time.

This kind of subjectivism or anti-realism comes to the surface of the history of thought from time to time buoyed up by various, and variously persuasive, kinds of reasoning. It is all the go in Anglo-Saxon academic philosophy at the moment, where it is derived from rather sophisticated positions taken about the nature of meaning and truth. At the opposite extreme of almost perfect naivete is the doctrine of Sir William Hamilton, the Scottish metaphysician subjected to a thorough examination by John Stuart Mill, of the relativity of knowledge. Hamilton proclaimed, only as they are known by us, and, therefore, not as they are in themselves. How on earth else, one must ask, are we to know things except as known by us? And why should it be supposed to follow from the tautology that we know things only as we know

them that we do not know them as they are? Really, if we know them at all, we know them as they are. Hayek's use of the psychological complexity of perception is not all that far from Hamilton's position. Why conclude from the complexity of the appliance to its unreliability? A large, expensive gramophone reproduces better than a cheap, old-fashioned thing you have to wind up.

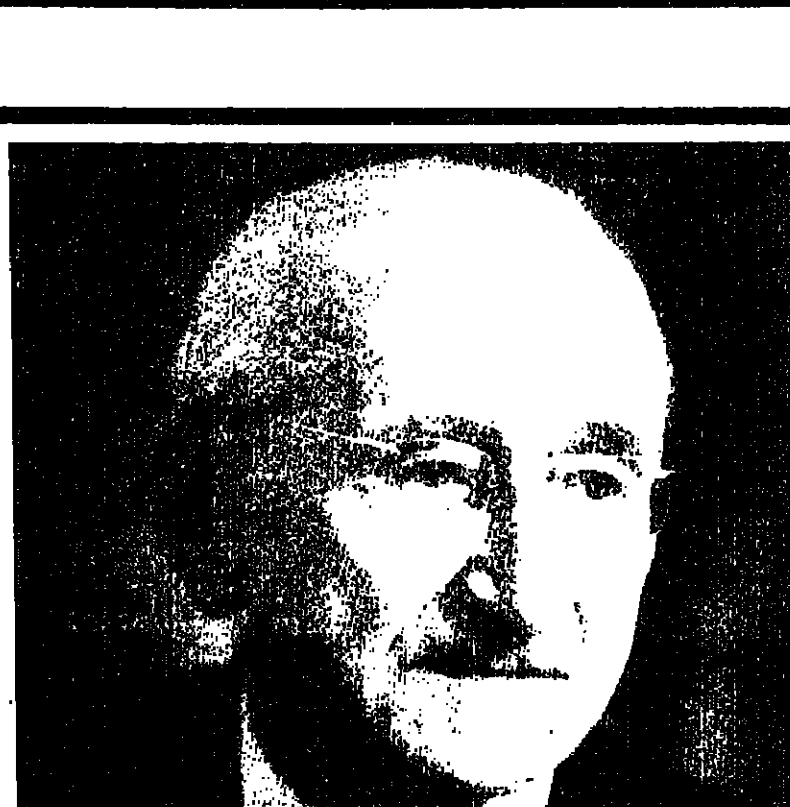
There is no need to go into this question at any depth since Hayek's doctrine of the mind's creative role in knowledge has no connexion whatever with his substantive doctrines. He was, at one time, tempted to hold that the methods appropriate to the natural sciences were quite distinct from those appropriate to the social sciences. He thought that conclusion was supported by the entirely correct observation that objects of the social sciences are to a large extent constituted by the beliefs and attitudes of human beings. Money is just metal discs and bits of paper without the existence of settled human dispositions to exchange things for it. That makes it more elusive than such paradigms of obviousness as the nose on your face. It makes it, in a way, subject dependent. But it does not make it subjective; it is really there, as money, coins or paper together with dispositions to exchange. What is more, it is not its subject-dependent elusiveness that makes the economy ungraspable by any one mind or planning committee; it is its multitudinousness and complexity of detail, a quantitative, not a qualitative, feature.

Hayek's account of the economy as the spontaneous, undesigned outcome of combining the intentional activity, and thus the dispersed knowledge, of the mass of individuals involved — his most notable contribution to social philosophy — is closer to another body of philosophical doctrine whose endorsement by him is reported by Gray: Michael Polanyi's theory of tacit knowledge. The great extent to which well-judged thought and action depend, in Polanyi's view, on tacit knowledge undermines the claims of explicit rationality in all but the most limited and clearly defined regions of human interest and activity. Warning to this theme Hayek argues, against the abstract individualism of the liberal tradition, that we are made what we are by the inarticulate rules of perception and action that we internalize. They set a limit to the possible range of rational criticism. Like Wittgenstein's "forms of life", of which they are a psychological version, these individuality-constituting rules must be taken for granted for critical rationality to be possible.

Gray takes the economy to be, in Hayek's view, one of several undesigned social orders or systems along with law and morality and also language, but does not develop the point in much detail. Neither inductive nor the outcome of rational calculation they are, for Hayek, the evolutionary product of natural selection. As well as being undesigned the economy has no purpose; it is only a framework for the pursuit of specific individual purposes. That is not wholly convincing. Even if not set up with an articulate purpose it could acquire a function and, if it is to survive the pressures of natural selection it had better be a valuable function which it serves effectively. It is, of course, systemic (the most valuable production from a given cost, perhaps), not specific (iced cakes, cathode ray tubes, literary for twelve-year-olds). In saying, as he plausibly does, that the economy is a "discovery procedure" he does not indicate its justifying function. The knowledge of tastes, techniques and opportunities it elicits and puts to use is of no value in itself, unlike gossip and learning.

Hayek has said that liberalism went wrong around 1870, the time of John Stuart Mill, when it fell from British into continental European hands and became abstract and rationalistic. The same might be said of his own anti-positivist theory of law which, for all its late-flourishing attachment to the common law, is pretty unBritish. It serves to darken counsel by saying that the law really is what it ideally ought to be. His tactical aim is evident: to arrange for the control of democratic politicians, underlining to the demand of the masses for handouts, by something less easily circumvented than a constitution. Times have changed. Where Mill feared the pressure of social convention, Hayek fears, even more than Mill did, the governmental tyranny of the majority.

It is a sign of the interest and unpeddled vigour of John Gray's book that one is led to argue with the substance of the Hayekian ideas he enthusiastically expounds rather than with his manner of presenting them. One aspect of the book that would have benefited from a bit more rational calculation by someone for such proof-readings, even allowing for such undesigned pleasures as a reference to the "trade muscle".



F. A. von Hayek

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Howard Williams is lecturer in political theory at the University College of Wales, Aberystwyth.

Lord Quinton is president of Trinity College, Oxford.

BOOKS

Heroic impulses

A Hamlet of His Time: Vsevolod Garshin, the man, his works and his milieu
by Peter Henry
William A. Meeuws. £17.50
ISBN 0 902672 41 1

Probably the best known facts about Vsevolod Garshin are that he suffered two mental breakdowns, one in his teens, the other in his twenties, and then committed suicide at the age of 33. His short stories survived for their curiosity value but were largely submerged in the generally acclaimed fustiness of Russian literature in the 1880s.

One achievement of Professor Henry's comprehensive study of Garshin is to establish this writer as a barometer of his times. He analyses the total oeuvre exhaustively in conjunction with Garshin's biography, both physical and spiritual. These literary biographical materials are complemented by pertinent and stimulating discussion of the period. The second part of the book contains an assessment of Garshin's contribution to Russian and world literature, and a compelling essay on his ethics and aesthetics. Finally, there are some useful appendices which include surveys of the critical writing on Garshin, tabulated biographical details, a chronological register of his works, and biographical details of the wide range of figures he encountered in the 1870s and 1880s. The whole work is underpinned by scholarly and helpful notes.

The main achievement is the extrication of Garshin's "filigree art" and ideas from the web of issues which preoccupied the intelligent in the pre-*fin de siècle* decade. For Professor Henry, Garshin exemplifies this period's interpretation of the Hamlet-Don Quixote juxtaposition. In its turn his particular combination of the characteristics of these two figures determined Garshin's sympathies in the debates among the progressives of the intelligentsia. Aesthetically, in Professor Henry's view, Garshin spans the old and the new: he represents a return to the earlier romantic age, and yet equally anticipates the modernist movement. Professor Henry's task is to distinguish Garshin from the literary giants who hedge him in, Garshin stands between the domes of Dostoevsky, the demise of Tolstoy's dedication to creative writing, and the ascent of Chekhov.

The work's subtitle, "A Hamlet of his

time", is borrowed from a contemporary reviewer of Garshin's stories, who referred to the ironic title of Lermontov's novel of the 1830s, *A Hero of Our Time*. Much of the point of this study concerns the dilemma of the intelligent in Garshin's period between the need to achieve a heroic deed (the *podvig*) and his instinctive knowledge of the impossibility of success. In 1860 Turgenev had crystallized this flaw within the Russian intelligentsia into the Hamlet and Don Quixote motif. During the 1880s in the upsurge of a renewed interest in Shakespeare's hero this polarization became a mode of self-contemplation for the intelligentsia. Garshin's spiritual dilemma is of the Hamlet type: a consciousness of the need for action inhibited by a preoccupation with irreconcilable motives. And yet, argues Professor Henry, there exists in Garshin a Quixotic impulsive, extrovert streak which, stimulated by certain violent and disturbing events, spurred him into heroic dedication to a cause, such as his voluntary involvement in the Russo-Turkish War in 1877. However, such Quixotic leaps cost Garshin dear: they were the spur to the mental illness which pursued him relentlessly. The outcome of this situation was both his salvation and his downfall. Experiences of mental illness led him to create what Professor Henry considers his best short story, "The Red Flower", but also led inexorably to his suicide.

In "The Red Flower", argues Professor Henry, Garshin presents insanity "as having a positive validity of its own". Through the illness of his hero Garshin projects a frighteningly real cosmic struggle between the powers of good and evil. The patient is conceived as "heroic" by becoming the battle ground for this struggle, even though he ultimately experiences failure as he yields to death.

The Hamlet-Don Quixote dichotomy determined the nature of Garshin's allegiance to the progressives. On the one hand he sympathized with those seeking urgent action to change the social order, but simultaneously he was brought to question their motives, aims and methods. The process culminated in non-participation and withdrawal on the excuse of illness.

Professor Henry argues convincingly that while heroes suggest a recall of romantic notions of self-sacrifice, even of spiritual agony, Garshin's stories clearly display a search for a new poetics, the hallmark of modernism. Garshin's prose from his first disturbing war stories is remarkable for its verbal economy and visual quality, its use of symbols and refusal to locate itself within a comforting and identifiable world. For Professor Henry, Garshin was a pioneer of literary impressionism. Throughout the study there is a conscious attempt to clarify Garshin's involvement with contemporary artists, by reference to his articles on art, and to his exploitation of this

interest in the visual mode of his writing.

To establish Garshin's identity as a writer and to prevent once and for all his submergence in a decade widely accepted as sterile, he is compared with the major writers who have previously overshadowed him. A Quixotic adoration for Tolstoyanism was soon replaced by a Hamlet-like renaissance: several of his stories were, however, written with Tolstoy's ideas in mind. After a careful comparison of Garshin with Dostoevsky, Professor Henry argues that the differences between them outweigh the similarities. They were "complementary and equally telling voices in the age of intensity". In Chekhov Garshin was content to find a worthy heir to complete his unfinished lead in the remodelling of the short story.

This complex study fulfils many tasks. It is biography, literary criticism, bibliography and essay. And most refreshing of all, the 1880s in Russia are aired, and left open for further investigation.

Cynthia Marsh

Dr Marsh is lecturer in Slavonic studies at the University of Nottingham.

The broken tradition

In the Age of Prose: Literary and philosophical essays
by Erich Heller
Cambridge University Press, £20.00 and £7.50
ISBN 0 521 25493 and 27495 8

There are few literary scholars more justified than Erich Heller in casting aside false modesty to re-issue the work of scattered occasions, and there are few more likely to meet with the reader's gratitude for doing so. These 14 essays, the most recent of which appeared in 1983, are the product of a little over a decade, and of widely varying provenance. They are ephemeral reviews and descriptive pieces – good of their kind – stand alongside formidable statements of Professor Heller's literary convictions, displaying an inspiring breadth of scholarship and reference.

If there is a theme running through the book, it is the one summarized in the second chapter, "The broken tradition", and it concerns the need to seek affirmation in the face of a modern negative, the loss of the assurance of harmony between the human mind and the universe, a harmony that was formerly the fundamental chord of the humanistic faith. The theme is most brilliantly developed in the chapter on Thomas Mann's *Doctor Faustus*, with

its illuminating accounts of the pacts signed by Goethe's Faust and Adrian Leverkühn with their respective devils. It also inspires the chapter on psychoanalysis and modern literature, which (following where Thomas Mann led) traces the links between German romanticism and modern psychologism, but points out the irony that, whereas the analytical insights of romantic irony were evolved to save the authentic life of the imagination from the wreckage of illusions, latter-day psychology from the nineteenth century onwards is the science of disillusionment, whose climate is unfavourable to poetry and helps to bring about that age of prose invoked in Professor Heller's title.

"Psychology and the misinterpretation of literature" castigates a vulgar Freudianism which is, however, not the only enemy of literature by which Professor Heller feels besieged. In "Literature and political responsibility", rejecting both the formal excesses of the New Critics and the political-ideological extremism which they culled forth in response, he states his own credo of spiritual conscience: "that conscience which must be one of the chief inspirations of literary criticism if it is to justify the important place we have allotted to it in our higher education". But how to define and defend spiritual conscience under the onslaught of Jacques Lacan and deconstruction, "promising words that never keep their promises"? Heller's belief in a critical competence which he superbly demonstrates, based in a secure knowledge of the language in

question, linguistic and historical sensitivity, patience and goodwill, is only the outward manifestation of an inner conviction less easily defined. What he says of Karl Kraus (almost an *alter ego*) could apply equally well to himself: "his life was lived and his work was done from a firm centre of belief, a firm indeed that it refuses to be penetrated even by the sharpest definition".

This is not to say that Erich Heller would not stand up any better under scrutiny than F. R. Leavis did under that of René Wellek in their famous exchange of 1937; but that a source of strength in Heller resists attack upon the conviction that, as Martin Jay has written, "the pursuit of high culture is somehow a humanizing endeavor". It is a conviction that enables Heller to retain a hierarchical distinction between *Dichtung* and *Literatur*, and, for example, to remove the Thomas Mann from the former category (which he seems the former category) to which he does not properly belong.

The implicit corollary is that *Dichtung*, which is to say literary art that declines to be absorbed into everyday life in the short run, in the long run offers through its grander definition of the writer's social responsibility more reassuring bulwark against the threatened revocation of civilization than does the transparent commitment of *Literatur*.

Alan Bance

Alan Bance is professor of German at the University of Keele.

own admission, a policy of deliberate restraint and self-effacement (not quite as unexpected a departure as Dr Williamson suggests, perhaps – Cervantes had, after all, been criticised for the excessive fracturing of the story line in part two, to be only partial, claiming that the narrative after Sancho's governorship reveals Cervantes' gradual discovery of the imperatives of realistic fiction is very valuable. Dr Williamson's unpicking of the text of *Don Quixote* to demolish received ideas is extremely fruitful and he is often excellent on the mechanics of the narrative.

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Melveena McKendrick
Melveena McKendrick is a fellow of Girton College, Cambridge.

BOOKS

Golden oldies

Religion, the Reformation and Social Change, and other essays
by Hugh Trevor-Roper
Secker & Warburg, £15.00
ISBN 0 436 425 10 6

There is, of course, no truth to the rumour that the history publishers have run out of things to print. History is a growth industry; there is more of it every day. No, the republication of the works of the great, the near great, and the would-be great is like a rock and roll revival, an opportunity for one generation to relive its youth and for another to discover what the fuss was about. In the space of a very few years we have had the "best of" Hexter, Hill, and Stone as well as Elton's volume III. As Quentin Skinner once dead-panned: "when historians grow older they write less and publish more".

For those who know its author only as Lord Dacre of Glanton, the reprinting of *Religion, the Reformation and Social Change* is a true golden oldie. No cheap-shot demolitions here; no regurgitated prejudices or recycled reviews; no occasional pieces worked up on the train to London. These are all, with the regrettable exception of "The Century", the best essays of the best essayist of the essay generation. They are worth reviving for the stimulating effect they once had upon European history, expanding the dimensions of the study of subjects like ideologies, witchcraft, and revolutionaries. They are also worth reviving for what they reveal about the intellectual vitality and self-confidence of the 1960s. But most of all, they are worth reviving as a tribute to the genre itself. In the space of forty-odd pages, the broad interpretative essay sets out to reshape historical periods; demolish historiographical traditions; and trace the impact of ideas across centuries or of individuals across nations. In our earnest, archival age it is an intellectual exercise that has gone the way of four o'clock tea.

In *Religion, the Reformation and Social Change*, H. R. Trevor-Roper takes as his subject the history of western Europe in the sixteenth and seventeenth centuries. By all accounts it was an age of ferment. Its severe demographic fluctuations fuelled economic boom and bust; it was devastated by those wars of religion in which subjects and sovereigns brought the spirit of the crusades back home; it was shaken by the political upheavals that Trevor-Roper has aptly labelled the "General Crisis of the Seventeenth Century". In that essay, in the title essay, and in "The European Witch-Craze", he struggles with the definition, description, and explanation of two and a half centuries of perpetual turmoil, turmoil which he can only characterize as repressive, regressive, and destructive.

Trevor-Roper has always been aggressively ambivalent toward his subjects – could the student of Hitler, Land, and Backhouse be anything

On party lines

Party and Management in Parliament 1640-1784
edited by Clyde Jones
Leicester University Press, £15.00
ISBN 0 7185 1199 9

A new political world fired by the "age of party" or the old world divided between "court" and "country"? An age of ideology and principle, or of self-seeking and interest? A continuing history of fairly clear alignments and positions, or an anarchy of ever fluctuating men and beliefs defying categorization? These are the questions about restoration and revolutionary England to which the more than a decade after the publication of the books – by J. H. Plumb, Geoffrey Holmes and W. A. Speck –



A provincial couple painted in 1628 by an unknown artist. The portrait is reproduced in *A Visual History of Costume: the seventeenth century* by Valerie Cumming (Batsford, £9.95).

but – and there is no fondness in these pieces for the sixteenth or seventeenth centuries. It was the worst of times and the worst of times. Calvinism, its contribution to the history of ideas, "was intellectually retrograde and repressive, a positive, vindictive enemy of enlightenment." It was the age of ignorance and the age of ignorance. Indeed, it was a nameless age: an age disingenuously intruded between Renaissance and Enlightenment, destroying the one and delaying the other. The witchcraft was as much a logical imperative of this barren, frightened, anti-rationalist epoch – which barred its soul in its preference of Calvin to Erasmus – as was genocide to the twentieth-century totalitarianisms of right and left.

Across the channel, the broad outline of intellectual sterility and political instability could be studied in greater depth. Five essays, notably on "The Philosophers of the Puritan Revolution", "Fast Sermons", and "Scotland and the Puritan Revolution" focus upon the British Isles. If England could not claim to have produced Erasmus, who united "the intellectual traditions of scepticism, mysticism, critical scholarship, lay reason, [and] free will", it did foster that other pantheistic paragon, Bacon. Yet Bacon's ideas languished in his native land. They were preserved by foreigner like Samuel Hartlib and Comenius and then reimported to provide the fragmentary, insubstantial ideology of the country party that underlay the English Revolution. Perversely, though no more so than his adversary Christopher Hill, Trevor-Roper has always emphasized the backward-looking elements of the leaders of the parliamentary cause. His famous essay "Oliver Cromwell and his Parliament" presents the paradox of Cromwell the defender of parliamentary

privilege and Cromwell the hammer of parliamentary sessions. His identification of the Lord Protector as the progenitor of the Tories, rather than of the Whigs and radicals, currently has unexpected resonance. For all of their discontents, both about the period and about its students, these essays maintain their charm. Trevor-Roper likes big questions and plausible answers. In the division of outlook encapsulated in the rubric "a fertile error is better than a sterile truth" he is on the side of procreation. His method is synthetic, collating secondary works and printed sources rather than sowing archives. He is no adept with manuscripts. But the range of knowledge – Europe north and south, England and Scotland – is awe-inspiring and only Geoffrey Parker, in a younger generation, is remotely comparable.

In the end, he relies upon style to beguile his readers. The arguments are enforced by all of the arts of the master rhetorician: the arresting phrase ("apocalyptic validation"), "theoretical lampoonery", the rhetorical question, the hammering repetition of the points that have been won. Confident assertions sweep away all uncertainties. Alternative arguments are mercilessly exposed and then withered with scorn: "How simple history would be if we could accept these convenient rules of thumb." Cumulative summaries lead to inexorable conclusions. And always there is that prose, that effortlessly superior Ciceronian style. If that other great purveyor of historical style, J. H. Hexter, writes with rolled-up sleeves, H. R. Trevor-Roper writes in a dinner jacket.

Mark Kishlansky

Mark Kishlansky is associate professor of history at the University of Chicago.

In the pursuit of pleasure

Henry IV
by David Buisseret
Allen & Unwin £18.50
ISBN 0 04944012 8

Like the two distinguished successors, Louis XIV and Napoleon, Henry IV has left behind a legend with which historians have to grapple. They have also to cope with a veritable "information explosion" which provides a daunting range of records for the reign. David Buisseret, an old hand in the field whose publications include a study of Henry's great minister, the Duc de Sully, has trawled extensively through published and unpublished sources to produce this latest biography of a much biographed king.

The book is written with lucidity and the quality of the writing is well served by the publisher's elegant production. It is a deceptive book on several levels. The author himself warns us in advance that the reign does not fit easily into existing stereotypes. There was indeed a paradox at its heart, for Henry of Navarre was both vacillating and tough, cruel and kind, a distinguished soldier anxious to pacify his country, a king dedicated to his office yet in the pursuit of pleasure careless even of the national interest. Buisseret knits some of these temperamental paradoxes into the fabric of the reign, enabling us to appreciate just how powerfully, for better or for worse, the

king left his mark upon his kingdom. Thus this long-time heretic whose scandalous private life set standards of lubricity unmatched until the era of the regent Orléans in the early eighteenth century, was responsible for renewing the spirituality of the French church by his judicious episcopal appointments. Less happily we discover that the Clous-Juchet crisis at the end of his reign which brought the country to the verge of a war likely to have been disastrous for France, owed its origin to Henry's lust for the young bride of the Prince de Condé. The latter, having been chosen by the king as the bridegroom so that his wife would remain at court and therefore available to receive Henry's advances, had the temerity to flee with her to Brussels.

In another respect too, this volume is deceptive, namely in the organization of the material. The book is arranged strictly chronologically with the emphasis upon the shorter period of Henry's kingship (twenty-one years) rather than upon the lengthier period (thirty-six years) of his apprenticeship. It is difficult to quarrel with this decision, though earlier biographies have tended to give equal weight to the two segments of Henry's life. However, upon first reading the chronological approach seems to be an inadequate method to pursue. The chapters are sub-divided into small sections, producing a narrative effect as each month and year is successively reviewed, an approach that appears to lack trenchancy. Yet the reality is rather different. As the book develops so does the character of the king, and our understanding of the problems facing him likewise grows. This mosaic approach offers sharp illumination when the pieces are all in place, and though it does raise doubts from time to time in the reader's mind, there is an irresistible logic in adopting a chronological plan to reconstruct a life and a reign.

This developmental approach also has its place in the longer perspective of *ancien régime* France. Buisseret vividly demonstrates the insecurity of French kingship at this time and the consequent need to strengthen the power of central government. Large sums were therefore spent on improving the country's communications, and central government continued to play the role of "proto-intendants" in the provinces. Though necessity dictated such policies Henry IV was also prepared to invest in a certain amount of ideological propaganda on behalf of his kingship. Architects, writers, engravers, medalists and painters were enlisted to glorify the ruler in ways which his grandson would emulate and surpass. A final paradox may be observed in the contrast between the awesome legend of Henry the Great which his servants worked to create and the reality of a king who preferred to dress in rattered old clothes, and whose lack of personal hygiene was famous even in that unhygienic age.

Buisseret's account is generally well-informed and illuminating, and there with perceptive comments which bring home to the reader the realities of the situation: he compares the circumstances surrounding the king's assassination with those accompanying the murder of President Kennedy in 1963.

J. H. Shennan

J. H. Shennan is professor of European history at the University of Lancaster.

connections and attitudes might well undergo drastic change?

The history of parties and parliaments in later seventeenth and early eighteenth-century England needs to be studied in these broader contexts of the attitudes, values and behaviour of the wider political world. We learn from this volume too little of the aims, wishes or tactics of the very different monarchs; too little of the politics or policies of the courts, often divided within themselves; too little of the local and personal circumstances which influenced the behaviour of men in parliament. Scholars will garner important material and references from this book. But a fuller introduction (an opportunity was missed here), in general a less self-contained approach in the essays might have offered that wider perspective which we still await.

Kevin Sharpe

Kevin Sharpe is lecturer in history at the University of Southampton.

which inspires what is easily the most lucid, wide-ranging and sensitive of the contributions – David Hayton's study of "The Country" interest and the party system". For Hayton explains (rather than explains away) the complexities of the post revolutionary political world and its taxonomy. He analyses terms – such as "patriot" or "country" as expressions of commonly held values as well as party labels; he embraces the maverick as well as the man of consistency; he incorporates interest as well as principle. Most of all he is sensitive to change not only in circumstances, but change which alters the meanings of words even though the words themselves, remaining constant, may mask the shift of meaning. Like the other contributors, Hayton argues for the importance of party: country sentiment, he concludes, became largely absorbed into Toryism. But he shows too that ideas (and ideals) never become the exclusive property of party, and that the search for consistency may be misguided: "how far should one expect consistency of belief or conduct over any length of time in men whose circumstances,



Miguel de Cervantes

Birth of the novel

The Half-Way House of Fiction:
Don Quixote and Arthurian Romance
by Edwin Williamson
Clarendon Press, Oxford University Press, £22.50
ISBN 0 19 815784 3

Don Quixote has long been acknowledged as the work which brought the modern novel, with its basis in realism and convincing characterization, into being. Settling once as it did to parody the degenerate off-romance represented by the chivalric narratives of the Renaissance, its procedures were necessarily antagonistic to those of the ideal world of romantic fiction: only a brutal collision with reality could convincingly reveal the extravagance of *Amadís de Gaula* and its progeny for the absurd fantasies they were.

But the modern novel did not spring fully formed from the helmet of Amadís. Edwin Williamson's book sets out to plot the decline of romance and then the transition from romance to novel within the text of *Don Quixote* itself. It is the record of a progression from the manufactured, manipulative world of romance, where the writer calls on the external authority of some accepted system of values and ideals to justify the twists and turns of his narrative, to the self-generating, inherently plausible world of the novel. It traces the

transition from a form of fiction that claims the justification of historicity to one that needs no authority other than itself.

Dr Williamson begins by investigating the vigorous beginnings of romance, showing how in Chrétien de Troyes the imaginative power of Celtic myth was harnessed by the intellectual structure of Christian Platonism. He then examines the late romances to show how the erosion of confidence in the validity of authorial invention produces a struggle for fictional authenticity that sometimes lapses into the ludicrous. This crisis of authority in a fiction that is torn between the desire to excite wonder (the marvellous) and the need to appear historically authentic is not eased by the emphasis of neo-Aristotelian theorists on verisimilitude; and unity, because these concepts were themselves vaguely defined and made principles of *admiratio* and variety. Cervantes was the first writer to confront these problems head on, wrestling with the rival claims of the verisimilar and the marvellous, unity and variety, the expansiveness of the creative imagination and the need to edify the reader.

Dr Williamson sees part one of *Don Quixote*, for all its declared parodic purpose, as still belonging to its narrative of adventures organized to illustrate the hero's lunacy, with interpolated tales that simply show the storyteller going about his business. Part two, on the other hand, marks a shift of interest from action to character; we see, as work here is, by Cervantes'

BOOKS

A new lease of life

Human Procreation: ethical aspects of the new techniques
A Report of a Working Party of the Council for Science and Society
Oxford University Press, £3.95
ISBN 0 19 857608 0

The Reproduction Revolution: new ways of making babies
by Peter Singer and Deane Wells
Oxford University Press,
£12.95 and £2.95
ISBN 0 19 217736 2 and 286044 5

While the Warnock committee met to ponder the ethical and legal issues raised by the new reproductive technology, a working party of the (independent) Council for Science and Society (CSS) was quietly deliberating the same questions. *Human Procreation* is the resulting report. *The Reproduction Revolution* is an excellent study by Peter Singer, an Australian philosopher of broadly utilitarian persuasion, and Deane Wells, a member of the Australian parliament.

Either book could be recommended to those interested in becoming acquainted with *in vitro* fertilization, artificial insemination by donor (AID), "womb leasing", and so on, and the ethical implications of using these techniques. Both provide clear explanations of the biology necessary to understand the procedures involved; both identify the main features of the techniques that are ethically problematic; and both set out clearly the main moral and legislative options. *That said, Singer and Wells' book* is the better read. *Human Procreation* is, for the most part, dry and judicious and largely confines its attention to currently available techniques. *The Reproduction Revolution* is more adventurous, considering also such futuristic possibilities as cloning and the rearing of babies entirely outside the womb. It is also enlivened by periodic excursions into reportage. The book opens, moreover, with an engaging account of a twenty-first century dinner party, in which the guests are preoccupied by a variety of esoteric methods.

Advance press coverage of the contents of the Warnock report makes it possible to draw comparisons with the conclusions arrived at by Singer and Wells and by the CSS working party. All propose the establishment of a standing body to monitor developments in the field and make periodic recommendations. All agree that when AID is carried out with a husband's approval, the offspring should be recognized as the legitimate child of husband and wife. The CSS working party recommends that the donor's identity be kept a secret, largely on the grounds that without such anonymity it would be hard to find sufficient donors. The Warnock committee apparently concurs. Singer and Wells, however, cite a survey suggesting that 61 per cent of potential donors would be prepared to have their identities revealed to the child at the age of eighteen, as with the genetic parents of adopted children, and present a strong case for treating AID like adoption in this respect.

On several points the argument of *The Reproduction Revolution* seems more cogent than that of *Human Procreation*. The CSS working party argues that a child born by AID or of a surrogate mother is likely to suffer "very real personal and social problems" and that consequently "it may often... be better" for the would-be parents to remain childless than to bring such a child into being. The illogicality of this line of thought is well brought out by Singer and Wells. Children born by AID or of a surrogate mother would not otherwise have existed at all. The problems they face in virtue of their unorthodox origins will not often, if ever, be so horrific that they would rather not have been born. So it would hardly have been better for them if their "parents" had never resorted to AID or surrogacy

and not better for the parents either, if it satisfies a deep-seated desire for a child that would otherwise have been frustrated.

A second point concerns the vexed question of research on human embryos and the stage of development beyond which it should be forbidden. According to the CSS working party, the question "When does life begin?" is unhelpful in this context, since even a sperm and ovum are alive. But hardly anyone thinks that mere biological life is what is at issue here: what is meant is "when does human life begin?" Most people already accept brain death as the end of human life, even though a (biologically) living organism of the species *Homo sapiens* remains. Singer and Wells suggest (as have others) that we "use the same criterion at the other end of existence", taking the "onset of brain function", perhaps around the end of the sixth week, to mark the beginning of a human life.

The CSS working party similarly recommends a limit on embryo research based on the development of the nervous system, but on the rather different grounds that before this "there is no possibility of any sense of pain". If that were the key consideration, however, it would in principle be morally permissible to carry out research on a human embryo for an indefinite period, provided only that it were suitably anesthetized.

In any case, the "brain life" criterion, while it requires far more phil-

sophical underpinning than Singer and Wells provide, has a rational appeal which other suggested criteria seem totally to lack. The Warnock committee, for example, following the British Medical Association, seems set provisionally to recommend 14 days as the limit, that being the latest an embryo could implant. But of what moral relevance is that, when there is no intention actually to introduce it into the uterus?

The greatest division of opinion, however, concerns the use of surrogate mothers. The CSS working party takes a generally dim view of the practice, but would not, unlike a majority of the Warnock committee, wish to restrict it by legislation. Singer and Wells, in contrast, while sharing the general dislike of surrogacy for profit, feel (as did a majority of the Warnock committee) that there is a place for the practice on a non-profit basis and under government supervision.

In the wake of the Warnock report, there is sure to be much stimulating debate on all these issues; in that debate it is to be hoped that the arguments advanced in *Human Procreation* and, more especially, *The Reproduction Revolution* will be given a fair hearing.

Michael Lockwood

Michael Lockwood is staff tutor in philosophy in the department for external studies at the University of Oxford.

Reducing vibration

Mechanical Vibrations for Engineers
by Michel Lalanne, Patrick Berthier and Johan Der Hagopian
Wiley, £7.95
ISBN 0 471 90197 0

Mechanical vibrations are either useful or unwanted. On the one hand, vibrators are a useful aid to the physiotherapist, and concussive blows may readily be poured into shattering if it is suitably vibrated. On the other hand, far more effort and money is spent on the removal of unwanted vibration.

Vibration of transportation vehicles will cause discomfort to passengers and crew alike and malfunctioning of equipment, unless the amplitude is kept within reasonable limits. It will also interfere with the performance of machines. Vibration also produces fluctuating stresses. If these become too large, breakage can occur. Even small fluctuating stresses can cause failure, if they are allowed to continue for a sufficient length of time, giving rise to fatigue. If such expensive failures are to be avoided, engineers must possess a good understanding of vibration phenomena and be able to predict likely problems at the design stage. They must also be able to take measurements to check the performance of a machine or structure and to eliminate any vibration problems.

Vibration levels are predicted using mathematical models. As in many instances it is possible to specify the motion of the structure by means of a relatively few components of displacement (degrees of freedom), the first three chapters of this book deal with

the response of systems having one, two and several degrees of freedom. And as it is necessary when considering the vibration of individual components to consider them as continuous systems having an infinite number of degrees of freedom, chapter four deals with the vibration of beams and plates.

The prediction of the detailed response of complete structures poses mathematical difficulties. Such difficulties have been overcome in recent years by the development of the finite element method, now used widely in many fields of engineering to represent the structure by an assemblage of elements of simple shape. The properties of such elements are determined prior to assembly, thus allowing the motion of the complete structure to be determined. An introduction to the method is presented in chapter five. Chapter six on the experimental aspects of vibration analysis, describes various methods of providing dynamic loads and different types of transducer, and also briefly outlines how to carry out the relevant measurements.

As many of the mathematical techniques described, especially the finite element method, lead to computations which are not feasible by hand, chapter seven briefly describes 12 computer programs written in Basic. The programs are in conversational mode and the results are output in graphical form where possible. The greatest strength of this easily accessible and modern introduction to vibration theory indeed lies in this final chapter of computer programs, as these should enable students to perform numerical experiments and gain valuable experience.

Maurice Pety

Maurice Pety is senior lecturer in the Institute of Sound and Vibration Research at the University of Southampton.

Reaction paths

Reactive Molecules: the neutral reactive intermediates in organic chemistry
by Curt Wentrup
Wiley, £33.20
ISBN 0 471 87639 9

Organic chemistry has two aspects, the static and the dynamic. One deals with the structures of molecules, the other with their reactions. The two are intimately related: the reactions of molecules depend, often in very subtle ways, on their structures; and the study of the ways in which they react, their so-called reaction mechanisms, requires a knowledge of their structure and of how they change during the course of a reaction.

One important question to be asked about the mechanism of a reaction is "Are the reacting molecules trans-

formed smoothly and directly into the products, or does the reaction occur in several steps with intermediate molecules being formed at intervals along the reaction path?" Sometimes the presence of an intermediate is obvious - for example, the reaction mixture may assume a colour that is neither that of the reactants nor that of the products. Often, however, the intermediates are of such fleeting existence that it is exceedingly difficult to demonstrate their presence - yet, like a subliminal interruption in a television programme, they may have a substantial effect on the system.

Curt Wentrup's scholarly book is about such reactive intermediates, in both their static and dynamic aspects. He has, in the main, confined his attention to molecules not bearing an electrical charge. (In his preface he indicates that a companion volume on charged intermediates may follow.) The book is aimed at advanced undergraduate and graduate students but their teachers might also learn much from its pages.

The first chapter is a rather breathless sprint through some of the basic

Muscle power

Muscles, Reflexes, and Locomotion
by Thomas A. McMahon
Princeton University Press,
£45.50 and £10.70
ISBN 0 691 08322 3 and 02376 X

Thomas McMahon, professor of applied mechanics at Harvard, is an engineer who has devoted much of his research effort to biological topics, especially to running and to the relationships between the sizes and the shapes of organisms. He has a remarkable facility for devising simple mathematical models and enlightening experiments. His new book is the first to attempt a comprehensive, mathematics-based account of muscle: how muscles work, how the nervous system controls muscle activity, and how muscles are used in running.

Those readers tempted to skip the mathematical passages, however, would miss the main point of the book. Mathematics is the most concise and the most precise form of logical argument; and the mathematics in this book is very simple, every step in each argument being clearly outlined. If you know a little elementary mathematics and are prepared to read slowly, there is little danger of getting lost. Problems are provided at the end of every chapter to consolidate and extend what the author is trying to teach. Some have solutions set out in full; others readers must solve for themselves (with answers at the end of the book).

Chapter one introduces the fundamental principles underlying muscle mechanics, including A. V. Hill's famous equation relating force to rate of muscle shortening. A solved problem at the end of the chapter uses a simple model incorporating a spring and a dashpot (a device for dumping out vibrations) to explain how a series of closely-spaced stimuli make tension

build up in a muscle. The next few chapters are concerned with the structure and energetics of muscle - in particular, the sliding filament model of muscle contraction, which is the subject of the longest and most elaborate mathematical section of the book. A short section on coordination describes the sense organs and reflexes involved in the control of posture and movement, though here it is surprising that the principle of negative feedback is explained so briefly.

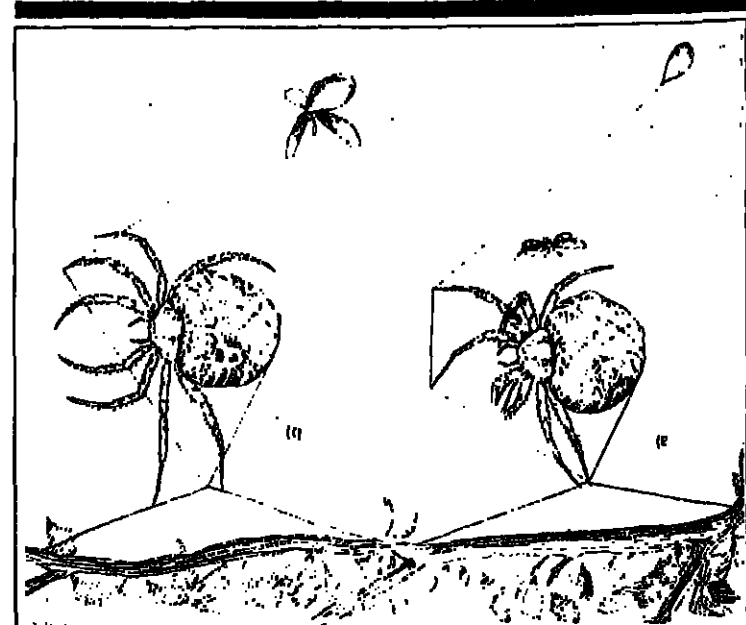
Coverage in the rest of the book, which deals with the mechanics of walking and running, is reasonably comprehensive. McMahon's own contributions are included; his theory of ballistic walking, which shows how legs may be swung forward without muscular action; his theory of elastic simulation, which tries to explain why ballerinas have relatively thicker leg muscles; and the amazing chameleon-tuned running track, designed by him, which enables athletes to run 2 per cent faster than on conventional tracks.

McMahon has a strong feeling for the history of his subject, making us aware throughout of the dates of the most important developments of the present century and of the names of the people involved. He also reminds us about how Jan Swammerdam's experiment of three hundred years ago demonstrated that the volume of a muscle does not change during contraction; and about E. J. Marey's experiment on running of one hundred years ago, using shoes with pneumatic bulbs in their soles connected to a portable kymograph (an instrument for recording movement, much used by later physiologists).

This book has much to offer all those concerned with muscle physiology or biomechanics, whether as research worker, teacher or advanced student. It is a new kind of book about muscle and it deserves to be widely read.

R. McNeill Alexander

R. McNeill Alexander is professor of zoology at the University of Leeds.



A bolas spider using its "fishing line" to capture prey. As the moth approaches, the spider whisks the line like a bolas (a). With luck, the moth comes into contact with the sticky droplet on the end and becomes trapped (b). From *Spiders of the World* by Rod and Ken Preston-Maham, published by Blandford Press at £8.95.

Times crossword, more thought-provoking problems would have better matched the high calibre of the rest of the book.

Richard A. Y. Jones

Richard Jones is senior lecturer in the school of chemical sciences at the University of East Anglia.

A collection of articles by eminent microbiologists, commissioned to celebrate the hundredth meeting of the Society for General Microbiology, has been published in two volumes as *The Microbe 1984* by Cambridge University Press at £20.00 each. Volume 1, *Viruses* has been edited by B. W. J. Mahy and J. R. Pattison; and *Prokaryotes and Eukaryotes* has been edited by D. P. Kelly and N. G. Carr.

A collection of studies in palaeontology and palaeoecology in honour of Winifred Tulin, has been edited by Elizabeth Y. Haworth and John W. Lund and published as *Life Science and Environmental History* by Leicester University Press at £9.00.

BOOKS

Real or imagined?

Constructing Quarks: a sociological history of particle physics
by Andrew Pickering
Edinburgh University Press, £20.00
ISBN 0 85274 458 4

Andrew Pickering has been amazingly industrious in preparing this survey of the development, from 1945 to the present day, of the investigation of the structure of matter by means of high-energy physics. He has interviewed most of the great men and some of the extensive reserve team; and he has read many of the review articles and some of the original papers. The result is a very detailed description of a remarkable enterprise.

Although I could question some matters of specific interpretation and attribution, in the main I think that Pickering gives an accurate account. My only major disagreement with the way he tells his tale is his claim that the discovery of the *J/psi* particles in 1974 represented a watershed, a "November revolution" as he would have it. Certainly the finding of these heavy but long-lived particles caused great excitement and their interpretation as states of "hidden charm", subsequent-

ly elaborated in a calculational scheme called charmonium, was an important advance. I see it, however, as just one further step in the development of what Pickering calls the "new physics", the insight that matter is composed of quarks and gluons whose interactions are described by gauge field theories.

If there is a critical point in this story, surely it came earlier, in the hard scattering experiments at Stanford in the late 1960s which first indicated the existence of point-like constituents within the hitherto "elementary" proton. From then on it seemed clear to many of us that some form of quark model was going to be necessary but, as we shall see, the acknowledgement of so definite a signal from nature would be uncongenial to Pickering.

I also think that Pickering has missed one or two points relevant to what is intended, in the words of his subtitle, to be a "sociological history" of high-energy physics. I would have made more of the effects of financial constraints, which have persistently concentrated the minds and threatened the progress of those working in what is inevitably a costly subject. It would also have been interesting to have had some discussion of the effect on experimenters of the necessity to work in large teams, each presided over by one of the "barons" of the high-energy physics world. Big science calls for the talents of the entrepreneur as well as those of the savant.

Nevertheless, it was a nostalgic pleasure for one who has lived through most of what is described to read this detailed account of developments. How widespread that pleasure will be, among his readers I am not so sure. Although Pickering takes trouble to

explain the main ideas in a form accessible to the layman, the latter is surely liable to be weighed down by the sheer bulk of the detail presented. Was all this really necessary? Pickering would no doubt say it was because he wants to tell it like it was. Not for him the over-simplified story ("the scientist's account" is what he unfortunately calls it) that retrospectively sees experiment as the arbiter inevitably dictating what theory is to be. Rather there is a continual interplay between theory (prompting and interpreting experiment) and experiment (confronting or provoking theoretical endeavour). Judgment is involved in deciding when an adverse or unexpected result is to be taken seriously as an important new discovery or dismissed as an unexplained discrepancy.

Not every experiment is possible, nor is every possible experiment seen or yielding a useful interpretation. The physicist has to do what he can: "opportunism in context" is the motto. That there is this interaction between theory and experiment - "sympiosis" is Pickering's word, "dialogue" would be mine - is incontrovertible. Science, as opposed to natural history, has to look at nature from a particular (if corrigible) point of view and to seek specific, often contrived, situations which are amenable to critical interpretation. A crucial step in the development of the new physics was the recognition that hard scattering experiments (those with large transfers of momentum) constituted a regime in which the theory of quarks, and eventually quantum chromodynamics (its detailed theoretical articulation), could make fairly specific statements. This role of selection and theoretical

sponsored to the pleas of his colleagues by agreeing to do this. During the next decade he built up Harwell from a green field site with no staff to a research establishment of over 5,000. By the time he retired to become the first Master of the new Churchill College Cambridge (yet another building job) in 1959, Harwell itself had spawned two other major atomic energy sites, at Winfrith and Culham. How well Cockcroft fared at Harwell is a moot point. Many younger scientists have tended to regard him as an enthusiastic and informed director, and he was able to attract a far higher calibre of scientists than would normally have considered government service. His diplomatic qualities were also invaluable in negotiations with the United States. But his equability, often reflected in a response of silence punctuated only by the occasional - and usually misleading - "yes", was not in fact well-matched to the strong and disciplined control needed to keep the project within a reasonable budget and the staff focused on the matter in hand. Experience showed that his style of direction was appropriate only to an expanding organization, being in this respect well matched to his passion for architecture and building works.

For the biographer, Cockcroft presents an interesting problem. For although his achievements were many, they were not the stuff of which great stories are made. His outward character was a bland one and he was not a life's struggle, and he had no great life's struggle for one so talented and successful he was, so to speak, extraordinarily ordinary. This said, however, the developments in which he participated were, quite literally, earth-shaking, and it therefore seems a great pity that Hartcup and Allibone should have written what is in effect a "life" without the "times". Although their account is very interesting in places, and does give a good impression of Cockcroft's character, overall it is as bland as he was. And this is not surprising, for it is written almost entirely from his papers, and from recollections of his colleagues. No use is made of the wider historical literature. Given Cockcroft's peculiar role this means in effect that all the interesting bits are left out.

The book is also, unfortunately, peppered with errors. Some are straight-forward slips but the majority derive from the same weakness as characterizes the work overall. Use is made, typically, of a single recollection or version of events which wider reading or more comprehensive interviewing would have readily shown to be fallacious.

Design for living

The Constants of Physics
edited by W. H. McCrea and M. J. Reece
Royal Society, £22.25
ISBN 0 85403 224 X

All physical theories contain physical constants, these being the parameters in the theories that have to be determined experimentally; fundamental theories contain fundamental constants. Of course, what is deemed fundamental depends on the state of development of physics. In principle, if not in practice, we can calculate the viscosity of a motor oil or the tensile strength of a noose. Such constants do not therefore count as fundamental. On the other hand, the masses of elementary particles and the strengths of their attractions and repulsions through various apparently fundamental forces have to be taken as given by experiment. Are we then, to imagine some celestial table of exact fundamental numbers that enter into the design of the world just as engineers at constants enter into an engineering design? The reports of a Royal Society meeting collected in this book take up a variety of issues connected with this question.

The question is particularly poignant because we should not be here to discuss the matter were it not for some precise tuning of the values of the physical constants. For example, the existence of long-lived stars, like the Sun, around which habitable planets can form depends on, among other things, the relative weakness of gravity compared with the electrostatic force. Such considerations give rise to the anthropic principle that certain fundamental features of the design of the universe are required for the existence of intelligent life. In fact, many less dramatic quantities of everyday life can also be related to the values of the fundamental constants. As William Press and A. P. Lightman put it in their article, even the four minute mile has a more fundamental significance than is commonly supposed, since a characteristic time of this magnitude arises naturally from the strengths of the gravitational and electromagnetic forces, the masses of electrons and protons, and the speed of light.

Could it nevertheless be the case that our present fundamental constants are derivable from some ultimate theory which would contain only natural constants like π and the integers? This is indeed what unified

theories attempt. A successful such theory would achieve the unification of the fundamental forces as aspects of geometry initiated by Einstein, though from a rather different point of view. For example, in modern versions of Kaluza-Klein theories, described rather too briefly in this published version of the meeting, the strengths of the various forces are attributed to the geometrical configuration of higher but unseen dimensions of the world. Of course, the four dimensions of our world are not enough to accommodate the fundamental constants which some versions of Kaluza-Klein theories attempt to explain. But, as C. H. Llewellyn-Smith and John Ellis describe, as matters stand at present the unified theories actually introduce a host of new parameters or unobserved elementary particles. There is also a rather dramatic disagreement with the so-called cosmological constant, which may be exactly zero and is certainly smaller by 120 powers of 10 than the number that seems to emerge naturally as a theoretical prediction.

A pessimistic note is struck by S. L. Adler and by H. B. Nielsen that our experiments at what are essentially rather low energies at the European Centre for Nuclear Research in Geneva (and elsewhere) may not be a sufficient guide to a unified theory valid at high energies. On this view the experimentally determined constants of nature could only be predicted by theories that were untestable on economic grounds. On the other hand, the universe soon after the big bang provides arbitrarily high energies, so perhaps the test of the ultimate theory is that it must predict the universe.

Contrary to the impression conveyed by its title, this book is not primarily concerned with the determination of the best values of physical constants, although there are some lively articles on this subject. Rather its domain is, in a sense, the whole of fundamental physics, because this is by definition where attempts to understand the fundamental constants are made. There is always a danger with such general discussions that they become the initiated talking to the initiated. The level of the book is in fact rather variable. Much of the discussion of unified theories would make little sense to a reader without some background knowledge of quantum field theory, but even this is not addressed primarily to the experts. And at the other extreme, only elementary mathematics is required to follow Brandon Carter's careful account of the timescales of biological evolution in the context of the anthropic principle. In between, there is a glimpse into a fascinating breadth of contemporary physics.

D. J. Raine

D. J. Raine is lecturer in astronomy at the University of Leicester.

today can think that the neutral current is an artefact of background calculations. The weight of experimental evidence accumulated is now overwhelming.

Second, certain theories show a fruitfulness, an openness to further exploitation and discovery, which strongly suggests that they are describing aspects of reality of which we are gaining a deeper grasp. The very story that Pickering has to tell of quarks and gluons has just this character.

A final bone of contention, Pickering contrasts the "old physics" of the 1960s, concerned with soft scatterings and using Regge theory as its theoretical tool, with the "new physics" of the 1970s and 1980s, concerned with hard scatterings interpreted using the theory of quantum chromodynamics. He sees them as an example of what Thomas Kuhn called "incommensurability", disjoint descriptions of different worlds. Of course, they have different foci of interest, because their tactics led them to concentrate on different phenomena, but they are only disjoint in this tactical sense of what to try to tackle first. One day some heroic group of theorists will set to work to unravel the Regge aspects of quantum chromodynamics. It will be a difficult task but certainly not a meaningless one.

John Polkinghorne

John Polkinghorne was until 1979 professor of mathematical physics in the University of Cambridge. His latest book "The Quantum World" was published by Longman earlier this year.



Cockcroft in 1947.

joined. Just before the war he was appointed to the Jacksonian professorship of natural philosophy.

His main work in Cambridge, however, was in neither research nor teaching, but in organizing the construction and reconstruction, equipment and re-equipment of buildings and laboratories: the Cavendish laboratory itself, the Mond laboratory for low-temperature research, and St John's College. In more peaceful times he might well have continued in this way until retirement, for it was a life he was thoroughly enjoyed. With the coming of war, however, he quickly turned his attention and abilities to the needs of his country. He was appointed assistant director of research in the Ministry of Supply and played a crucial role not only in the mobilization of scientific effort for research and in the liaison between scientists and the military, and later between British and French scientists, and in negotiations with the Americans and Canadians for the development and production of British inventions for military use.

In 1944 he moved to Canada to take charge of the Anglo-French-Canadian atomic energy project, building up a new establishment at Chalk River and turning a divided and unproductive one into a unified and productive one. Although he wished when the war ended to return to Cambridge, he was the natural choice to build up Britain's atomic energy project and, he re-

John Hendry

John Hendry's book "The Creation of Quantum Mechanics and the Bohm-Philosophy" was published recently by Reidel.

Fellows continued

ESRC/NERC RESEARCH FELLOWSHIP IN COMMON AGRICULTURAL POLICY IMPACT STUDIES

The Environment and Planning Committee of the Economic and Social Research Council, with the Natural Environment Research Council, invite applications for a 2-year Research Fellowship, based at the Institute of Terrestrial Ecology, Marlewood Research Station, Cumbria.

Candidates should be experienced Social Science Researchers and have a knowledge of and interest in environmental issues and policy impact studies.

The Fellow will be required to undertake research into the likely consequences of the progressive removal of the many different forms of pricing support, through the Common Agricultural Policy, for such things as: land values, land uses, farm income, consumer prices, wildlife, conservation and scenic landscapes. The focus would primarily be on the uplands. This work is seen as providing a social science input into the essentially ecological work being undertaken by ITE on land resources and land use.

The Fellow will be expected to work full-time on the research, to participate in wide academic debates and integrate his/her work into ESRC's new "Environmental Issues" programme.

The Fellowship will commence on 1 January, 1985. Salary is expected to be based on the Range I scale for research staff (currently £10,710-£14,125). Application forms and further details may be obtained from Dr P B Long, ESRC, 1 Temple Avenue, London EC4Y 0BD (Tel 01-353 5252 ext 216).

Completed application forms should be returned not later than Friday, 31 August 1984. Interviews of short-listed candidates will be held in the autumn.

(10866)

Polytechnics

PAISLEY COLLEGE

A Scottish Central Institution

EDUCATIONAL DEVELOPMENT UNIT

Applications are invited for the post of DIRECTOR of this Unit which was set up to foster and support developments aimed at improving the effectiveness of teaching throughout the College. The DIRECTOR of the Unit will be expected to work closely with academic staff and provide imaginative leadership in educational development and the production of support material and also in adapting the best available techniques for use in areas of interest to the College (particularly science, technology and engineering). The successful applicant should have appropriate qualifications, lecturing skills and experience in the production and use of media based teaching material.

Salary Scale £12,777 to £16,104. Application forms and further particulars are available from the Personnel Officer, Paisley College of Technology, High Street, Paisley PA1 2BE. Tel: 041-887 1241 ext. 230, to whom completed forms should be returned.

(10865)

TEESIDE POLYTECHNIC

We are an Equal Opportunity Employer

Department of Business and Professional Studies

LECTURER II IN BUSINESS INFORMATION SYSTEMS

(Including Quantitative Methods)

Applications are invited for a post to assist in developing an increasingly important aspect of the Department's work. The successful candidate will have responsibility for the design, development and delivery of business information systems. The successful applicant should have appropriate qualifications, lecturing skills and experience in the production and use of media based teaching material.

Salary Scale £12,777 to £16,104. Application forms and further particulars are available from the Personnel Officer, Teeside Polytechnic, Borough Road, Middlesbrough, Cleveland, TS1 3BA. Telephone (0642) 219121 Extension 4114.

(10862)

COVENTRY (LANCHESTER) POLYTECHNIC

Department of Art and Design

HEAD OF DEPARTMENT

BURNHAM GRADE IV

Applications are invited for the post of Head of this Department available from 1st September 1984 in the Faculty of Art and Design. The Department offers a unique 4 year BA Honours Course in Industrial Design (Transportation) as well as a 1 year course for re-training teachers in Craft, Design and Technology, and an expanding design development programme. Candidates for this important post should have an appropriate background in design, transport and/or education. The person appointed will have responsibility for the development of the Department and the maintenance of standards in its established courses. He/she will be strategic, enthusiastic and able to make a significant contribution to the expression and success of the design consultancy operation.

Further particulars and application forms are available from Mr J. Atwood, Coventry City Council, City Hall, Corporation Street, Coventry CV1 1JF. Telephone (0203) 24164. Ext. 212. Closing date Friday, 24th August 1984. An Equal Opportunity Employer.

(10867)

Faculty Administrator £12,330 - £13,365 pa inc

A challenging opportunity to take responsibility for the administration of the polytechnic's Faculty of Engineering, Science and Mathematics, managing a team of non-teaching staff including some 50 highly skilled technicians.

Other responsibilities include the administration of the Faculty Board and its committees, provision of management information, administration of financial resources, and course examination administration.

A proven record of administrative and managerial achievement is expected, together with demonstrable creative and analytical skills, expertise in staff management, and appropriate undergraduate and post-experience qualifications.

Write quoting ref D101C for further details and an application form, posting first-class to: Personnel Office, Middlesex Polytechnic, 114 Chase Side, London N14 5PN. Closing date July 30.

(10848) Middlesex Polytechnic

Sheffield City Polytechnic CHAPLAIN

Applications are invited for a post of Chaplain to share in a wide-ranging and flexible ministry to the Polytechnic. The work will include pastoral care of students and staff of the Polytechnic and University. The Chaplain must be able to work within a team which is part of a multi-disciplinary institution and to relate effectively to an inter-faith context. There will be the opportunity to contribute to the academic life of the Polytechnic and applicants should indicate areas of interest and qualifications. The post is open to women and men, and the appointment will be from 1st January 1985 or earlier if possible.

Salary scale: Lecturer II £7,215-£11,568. Application forms and further details are available from the Personnel Office, (Dept. TR18), Sheffield City Polytechnic, Halford House, Fitzalan Square, Sheffield S1 2BB or by telephoning 0742-20911, Ext. 2387. Closing date 18th September.

Completed application forms should be returned not later than Friday, 31 August 1984. Interviews of short-listed candidates will be held in the autumn.

(10867)

LECTURER II/SENIOR LECTURER IN FRENCH

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

(10848)

Bristol Polytechnic

Department of Computer Studies and Mathematics

RESEARCHER B

Ref: R/61

Integrated Computer-Based Management Information Systems

Public Sector

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

(10848)

Polytechnic of Central London

Faculty of Engineering & Science

LECTURER II IN PHYSIOLOGY

Ref: 10848

The School of Paramedical Studies requires a Lecturer II in Physiology to teach a broad range of physiological topics across the spectrum of human physiology. The successful candidate will have a PhD or equivalent qualification in physiology and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the School and to the wider community.

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(10848)

Brighton Polytechnic

Department of Mathematics

LECTURER II/SENIOR LECTURER IN STATISTICS

Ref: 10848

The Department of Mathematics requires a Lecturer II or Senior Lecturer in Statistics to teach a broad range of statistical topics across the spectrum of human statistics. The successful candidate will have a PhD or equivalent qualification in statistics and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

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(10848)

Oxford Polytechnic

Faculty of Educational Studies

HEAD OF DEPARTMENT OF DESIGN

Ref: 10848

The Department of Design requires a Head of Department to lead a team of staff and students in the development of the Department and to contribute to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

(10848)

Derbyshire College of Higher Education

(Re-advertisement)

FACULTY ADMINISTRATIVE OFFICER

Ref: 10848

The Faculty of Education, Humanities and Social Sciences requires a Faculty Administrative Officer to assist in the management of the Faculty and to contribute to the wider community.

(10848)

Polytechnic of the South Bank

Borough Road, London SE1 0AA
Department of Mathematical Sciences and Computing
Ref: X.22

The Department offers a wide range of full-time and part-time courses in Computing and Mathematics. The successful candidate will have a PhD or equivalent qualification in computing and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

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(10848)

Bristol Polytechnic

Department of Computer Studies and Mathematics

RESEARCHER B

Ref: R/61

Integrated Computer-Based Management Information Systems

Public Sector

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Polytechnic of Central London

Faculty of Engineering & Science

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(10848)

Derbyshire College of Higher Education

(Re-advertisement)

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(10848)

Colleges and Institutes of Higher Education

Roehampton Institute

Digby Stuart
Faculty of Social Sciences
Southlands
Whitlands

Applications are invited for a post of Lecturer in Sociology and Social Administration. The successful candidate will have a PhD or equivalent qualification in sociology and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

LECTURESHP IN SOCIOLOGY AND SOCIAL ADMINISTRATION

Applications are invited from persons with higher degrees in either sociology or anthropology to contribute to sociological foundation and core courses in the Joint Honours Degree in Sociology, and also to optional courses including the Anthropology or Sociology of Religion. The successful applicant will be in addition be asked to help with sociological or anthropological courses for the Religious Studies Department.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

Buckinghamshire College of Higher Education

School of Management Studies and Languages
SENIOR LECTURER IN MANAGEMENT STUDIES

Applications are invited for a post of Senior Lecturer in Management Studies. The successful candidate will have a PhD or equivalent qualification in management studies and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

Canterbury Christ Church College of Higher Education

Required for 1st January, 1985
LECTURER II/SENIOR LECTURER IN MOVEMENT STUDIES

Applications are invited for a post of Lecturer in Movement Studies. The successful candidate will have a PhD or equivalent qualification in movement studies and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

Barrrow College of Higher Education

Faculty of Science and Technology
SCHOOL OF ENGINEERING
LECTURER GRADE II IN INSTRUMENTATION AND CONTROL

Applications are invited for a post of Lecturer in Instrumentation and Control. The successful candidate will have a PhD or equivalent qualification in instrumentation and control and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

Southampton College of Higher Education

Faculty of Technology
TEMPORARY LECTURER II/SENIOR LECTURER IN MECHANICAL/PRODUCTION ENGINEERING

Applications are invited for a post of Temporary Lecturer in Mechanical/Production Engineering. The successful candidate will have a PhD or equivalent qualification in mechanical/production engineering and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

West Sussex Institute of Higher Education

Quaker Training Bishop Otter College, Chichester and Bognor Regis College

LECTURER IN ENGLISH

Ref: 10848

The Department of English requires a Lecturer in English to teach a broad range of English topics across the spectrum of human English. The successful candidate will have a PhD or equivalent qualification in English and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

(10848)

S. Martin's College of Higher Education

Lancaster
PART-TIME LECTURER IN DRAMA

Applications are invited for a post of Part-time Lecturer in Drama. The successful candidate will have a PhD or equivalent qualification in drama and a minimum of 3 years' postgraduate experience in the field. The successful candidate will be expected to contribute to the development of the Department and to the wider community.

Salary: £7,215-£11,568 (Lecturer 2) -£13,435 (Senior Lecturer)

Required 1 September 1984 if possible. Application forms and further particulars (returnable within 7 days of advertisement) from Establishment Officer, The Polytechnic, Wolverhampton WV1 1SB (0902 710654-24 hour answering machine).

West London Institute of Higher Education

LECTURER III IN COMPUTING/INFORMATION TECHNOLOGY

Applications are invited for a post of Lecturer in Computing/Information Technology. The successful candidate will have a PhD or equivalent qualification in computing/information technology and a minimum of 3 years' post

